City of Franklin

109 3rd Ave S
Franklin, TN 37064
(615) 791-3217

Meeting Agenda

Franklin Municipal Planning Commission

Thursday, June 22, 2023	7:00 PM	Board Room

Notice is hereby given that a meeting of the Franklin Municipal Planning Commission will be held on the date, time and at the location listed above. Additional information can be found at www.franklintn.gov/planning.

The typical process for discussing an item is as follows:

1. *Staff Presentation*
2. *Public comments*
3. *Applicant presentation, and*
4. *Motion / discussion / vote*

Applicants are encouraged to attend the meeting, even if they agree with the staff recommendation. The Planning Commission may defer or disapprove an application/request unless someone is present to represent it.

For accommodations due to disabilities or other special arrangements, please contact the Human Resources Department at (615) 791-3216, at least 24 hours prior to the meeting.

CALL TO ORDER

CITIZEN COMMENTS (Open for citizens to be heard on any issue or concern, including those related to items on the agenda. Please submit a Speaker Card at the beginning of the meeting if you would like to address the Commission. If you would like to speak on an agenda item, the Chair will hold your comment until the public comment period associated with the item. As provided by law, the Commission shall make no decisions or consideration of action of citizen comments for items not on the agenda, except to refer the matter to the Planning Director/Staff for administrative consideration, or to a schedule the matter for consideration at a later date. Those addressing the Commission are requested to come to the microphone and identify themselves by name and address for the official record. The Chair may restrict the period for public comment, including the length of the public comment period, the number of individuals who can speak and the length of time each individual may speak. When time allows, the standard individual public comment time is two minutes.)

Comments on agenda items may be made in person at city hall or by emailing planningintake@franklintn.gov by noon on the day prior to the meeting. Emailed comments will be provided to the Commission and included in the minutes, but not read aloud in their entirety during the meeting.

APPROVAL OF MINUTES

1. Consideration Of Approval Of The May 25, 2023 FMPC Minutes.

ANNOUNCEMENTS

VOTE TO PLACE NON-AGENDA ITEMS ON THE AGENDA

The non-agenda process, by design, is reserved for rare instances, and only minor requests shall be considered. Non-agenda items shall be considered only upon the unanimous approval of all of the Planning Commission members.

CONSENT AGENDA

The items under the consent agenda are deemed by the Planning Commission to be non-controversial and routine in nature and will be approved by one motion. The items on the consent agenda will not be individually discussed. Any member of the Planning Commission, City Staff, or the public desiring to discuss an item on the consent agenda may request that it be removed and placed on the regular agenda. It will then be considered in its printed order.

2. Consideration Of Items 3-12 And 20-22 On The Consent Agenda.

SITE PLAN SURETIES

3. Gateway Community Church Subdivision, Site Plan; Extend The Performance Agreement For Green Infrastructure Improvement To June 27, 2024. (CONSENT AGENDA)

   Sponsors: Melodie Brady

4. Get Ready Subdivision, Site Plan; Extend The Performance Agreement For Drainage Improvement To June 27, 2024. (CONSENT AGENDA)

   Sponsors: Melodie Brady

5. Highlands At Ladd Park PUD Subdivision, Final Plat, Section 17, Revision 1; Extend The Performance Agreement For Drainage, Landscaping, Sidewalks And Streets Improvements To June 27, 2024. (CONSENT AGENDA)

   Sponsors: Melodie Brady

6. Highlands At Ladd Park PUD Subdivision, Site Plan, Section 19; Extend The Performance Agreement For Landscaping Improvement To June 27, 2024. (CONSENT AGENDA)

   Sponsors: Melodie Brady

7. Lockwood Glen PUD Subdivision, Site Plan, Section 8; Extend The Performance Agreement For Landscaping Improvement To June 27, 2024. (CONSENT AGENDA)

   Sponsors: Melodie Brady

8. Parish Presbyterian Church Subdivision, Site Plan (Multi-Purpose Building); Accept The Sewer Improvement, Release The Performance Agreement. (CONSENT AGENDA)

   Sponsors: Melodie Brady

9. Pinnacle Commons Subdivision, Site Plan; Extend The Performance Agreement For Landscaping Improvement To June 27, 2024. (CONSENT AGENDA)

Sponsors: Melodie Brady

10. Preserve At Echo Estates PUD Subdivision, Final Plat, Section 1; Accept The Drainage Improvement, Release The Performance Agreement. (CONSENT AGENDA)

Sponsors: Melodie Brady

11. Spring Creek Subdivision, Site Plan, Section 1, Revision 4 (Spring Creek Center); Extend The Performance Agreement For Landscaping Improvement To June 27, 2024. (CONSENT AGENDA)

Sponsors: Melodie Brady

12. Stream Valley PUD Subdivision, Site Plan, Section 14; Extend The Performance Agreement For Landscaping Improvement To June 27, 2024. (CONSENT AGENDA)

Sponsors: Melodie Brady

ENVISION FRANKLIN PLAN AMENDMENTS

13. PUBLIC HEARING: Consideration Of Resolution 2023-010, A Resolution To Adopt An Envision Franklin Plan Amendment For A Parcel Located At 4315 S Carothers Road, Known As Map 089 Parcel 04600, To Change The Design Concepts Map From Mixed Residential To Neighborhood Commercial.
FMPC 3/23/23, Deferred 8-0; 4/27/23, Deferred 8-0

Sponsors: Emily Wright, Kelly Dannenfelser, Andrew Orr, Teresa Anderson

14. PUBLIC HEARING: Consideration Of Resolution 2023-011, A Resolution To Adopt An Envision Franklin Plan Amendment For Parcels Located At 3453, 3465, 3485, 3513, and 3515 Carothers Parkway, Known As Map 089 Parcels 02611, 02605,02604, and 02600, To Change The Design Concepts Map From Mixed Residential To Neighborhood Commercial.
FMPC 3/23/23, Deferred 8-0; 4/27/23, Deferred 8-0

Sponsors: Emily Wright, Kelly Dannenfelser, Andrew Orr, Teresa Anderson

PLAN OF SERVICES/ANNEXATIONS/ZONINGS

15. Consideration Of Resolution 2023-49, A Resolution Adopting A Plan Of Services For The Annexation Of Property Located South Of The Intersection Of Peytonsville Road And Pratt Lane, Outside Of The Southeastern Part Of The Franklin Urban Growth Boundary (UGB), By The City Of Franklin, Tennessee.

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

16. Consideration Of Resolution 2023-48, A Resolution Requesting A Referendum For The Annexation Of Property Located South Of The Intersection Of Peytonsville Road And Pratt Lane, And Outside Of The Southeastern Part Of The Franklin Urban Growth Boundary (UGB), By The City Of Franklin, Tennessee.

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

17. Consideration Of Ordinance 2023-24, An Ordinance To Zone 5 Acres Estate Residential (ER) District, For The Property Located South Of The Intersection Of Peytonsville Road And Pratt Lane, At 4436 Pratt Lane.

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

REZONINGS/DEVELOPMENT PLANS

18. Consideration Of Ordinance 2023-22, An Ordinance To Rezone 2.906 Acres From Regional Commerce 6 (RC-6) District To Planned (PD 61.3/3,362) District For The Property Located East Of Mack Hatcher Memorial Parkway And North Of Cool Springs Boulevard. (101 Cool Springs Boulevard PUD Subdivision)
FMPC 5/25, Deferred 6-0

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

19. Consideration Of Resolution 2023-42, A Resolution Approving A Development Plan For 101 Cool Springs Boulevard PUD Subdivision, For The Property Located East Of Mack Hatcher Memorial Parkway And North Of Cool Springs Boulevard.
FMPC 5/25, Deferred 6-0

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

SITE PLANS, PRELIMINARY PLATS, AND FINAL PLATS

20. Parish Presbyterian Church Subdivision, Final Plat, Creating One Lot, And Dedicating Right-Of-Way And Easements, On 13.81 Acres, Located At 4150 Clovercroft Road. (CONSENT AGENDA)

Sponsors: Emily Wright, Amy Diaz-Barriga, Ariella Stanford

21. Westhaven PUD Subdivision, Final Plat, Section 63, Creating 63 Single-Family Lots, 2 Open Space Lots, And Dedicating Public Right-Of-Way And Easements, On 16.789 Acres, Located Near The Intersection Of Eliot Road And Congress Drive. (CONSENT AGENDA)

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

22. Westhaven PUD Subdivision, Final Plat, Westhaven Golf Club, Revision 1, Creating One Lot And Revising Easements, On 61.695 Acres, Located Near The Intersection Of Boyd Mille Pike And Golf Club Lane, at 4000 Golf Club Lane. (CONSENT AGENDA)

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

NON-AGENDA ITEMS

ANY OTHER BUSINESS

ADJOURN

City of Franklin

109 3rd Ave S
Franklin, TN 37064
(615) 791-3217

Meeting Minutes

Franklin Municipal Planning Commission

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CALL TO ORDER

Chair Lindsey called the meeting to order at 7:00 pm.

Commissioners Present: Jennifer Williamson, Scott Harrison, Michael Orr, Ann Petersen, Marcia Allen, Roger Lindsey

Commissioners Absent: Jimmy Franks, Nick Mann, Alma McLemore

APPROVAL OF MINUTES

1. Consideration Of Approval Of The April 27, 2023 FMPC Minutes.

Sponsors:

Attachments: 1. DRAFT4 April 27, 2023 FMPC Minutes

A motion was made by Commissioner Scott Harrison, seconded by Commissioner Ann Petersen to Approve the Minutes from the April 27, 2023, meeting. The motion carried 6-0

CITIZEN COMMENTS ON ITEMS NOT ON THE AGENDA

Chair Roger Lindsey asked for citizen comments. There were none.

ANNOUNCEMENTS

Chair Roger Lindsey asked if staff had any announcements.

Ms. Wright announced that there will be a special joint conceptual workshop of FMPC and BOMA on June 12, 2023, from 11:30 am to 4 pm in the Training Room of City Hall. The agenda, which was published in the paper, will include topics about Envision Franklin Updates along with other special topics.

Ms. Wright also announced that a special Community Meeting will be held on June 26, 2023, to discuss the Factory District recommendations. The Community Meeting will be held in Liberty Hall in the Factory from 5-7 pm.

VOTE TO PLACE NON-AGENDA ITEMS ON THE AGENDA

Chair Roger Lindsey asked if there were any non-agenda items to be presented. There were none.

CONSENT AGENDA

2. Consideration Of Approval Of Items 3-8 And 13-17 On The Consent Agenda.

Sponsors:

Attachments: None

A motion was made by Commissioner Marcia Allen, seconded by Commissioner Michael Orr to approve items 3-8 and 13-17 as presented on the Consent Agenda. The motion carried 6-0.

SITE PLAN SURETIES

3. Berry Farms Town Center PUD Subdivision, Final Plat, Section 4; Extend The Performance Agreement For Streets Improvement To December 14, 2023. (CONSENT AGENDA)

Sponsors: Melodie Brady

Attachments: None

The item was Approved on Consent Agenda.

4. Carothers Development Property Subdivision, Final Plat, Revision 1; Extend The Performance Agreement For Drainage Improvement To May 23, 2024. (CONSENT AGENDA)

Sponsors: Melodie Brady

Attachments: None

The item was Approved on Consent Agenda.

5. Hard Bargain Mt. Hope Subdivision, Final Plat; Extend The Performance Agreement For Sidewalks Improvement to May 23, 2024. (CONSENT AGENDA)

Sponsors: Melodie Brady

Attachments: None

The item was Approved on Consent Agenda.

6. Lincoln Square Subdivision, Site Plan, Revision 1, Lots 6-8 (Aspen Grove Plaza Office Park Phase III Building 4); Extend The Performance Agreement For Multipurpose Trail Improvement To May 23, 2024. (CONSENT AGENDA)

Sponsors: Melodie Brady

Attachments: None

The item was Approved on Consent Agenda.

7. Lockwood Glen PUD Subdivision, Final Plat, Section 5; Extend The Performance Agreement For Drainage Improvement To May 23, 2024. (CONSENT AGENDA)

Sponsors: Melodie Brady

Attachments: None

The item was Approved on Consent Agenda.

8. Preserve At Echo Estates PUD Subdivision, Site Plan; Extend The Performance Agreement For Landscaping Section 2 Buffers Improvement To May 23, 2024. (CONSENT AGENDA)

Sponsors: Melodie Brady

Attachments: None

The item was Approved on Consent Agenda.

REZONINGS/DEVELOPMENT PLANS

9. Consideration Of Ordinance 2023-22, An Ordinance To Rezone 2.906 Acres From Regional Commerce 6 (RC-6) District To Planned (PD 61.3/3,362) District For The Property Located East Of Mack Hatcher Memorial Parkway And North Of Cool Springs Boulevard. (101 Cool Springs Boulevard PUD Subdivision)

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

Attachments:
1. MAP 101 Cool Springs Boulevard PUD, Rezoning and Development Plan
2. ORD 2023-22 An Ordinance to Rezone 2.906 Acres of 101 Cool Springs Boulevard from RC-6 District to Planned District_Combined_Law
3. 8158 101 Cool Springs Rezoning Request
4. 101 Cool Spring TIS - 20223-05-04 COF

Staff:
Chelsea Randolph. Ms. Randolph stated that the applicant is requesting deferral of the rezoning request and the development plan to the June 2023 FMPC meeting and that staff was in support of the request.

Chair Lindsey stated that the item had been publicly noticed, so if anyone from the public would like to speak to this item they may do so at this time.

There being no public input, Chair Lindsey asked for any applicant's presentation.

Applicant:
Jeff Rosiak. Mr. Rosiak stated that they are requesting a deferral and that he would be happy to answer any questions.

Chair Lindsey asked the Commissioners for a motion.

Commissioner Orr moved to defer Resolution 2023-22 to the June 22nd, 2023, FMPC Meeting, seconded by Commissioner Harrison.

There being no discussion, Chair Lindsey proceeded with a roll call vote.

A motion was made by Commissioner Michael Orr, seconded by Commissioner Scott Harrison to defer Ordinance 2023-22 to the June 22, 2023 FMPC Meeting. The motion Passed 6-0.

10. Consideration Of Resolution 2023-42, A Resolution Approving A Development Plan For 101 Cool Springs Boulevard PUD Subdivision, For The Property Located East Of Mack Hatcher Memorial Parkway And North Of Cool Springs Boulevard.

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

Attachments:
1. MAP 101 Cool Springs Boulevard PUD, Rezoning and Development Plan
2. RES 2023-42 101 Cool Springs Boulevard PUD Subdivision_Combined_Law approved
3. 8157 101 Cool Springs Boulevard PUD Subdivision, Development Plan Conditions of Approval_01
4. 2023-5-4_101 Cool Springs Boulevard PUD Subdivision Development Plan
5. 101 Cool Spring TIS - 20223-05-04 COF

Chair Roger Lindsey stated this item is being requested for deferral until the June FMPC meeting.

Chair Roger Lindsey asked if anyone from the public would like to comment on this item. There being no public input, Chair Lindsey asked the Commissioners for a motion.

A motion was made by Commissioner Marcia Allen, seconded by Commissioner Michael Orr to Defer Item 10 until June 22, 2023. The motion carried 6-0.

11. Consideration Of Ordinance 2023-15, An Ordinance To Rezone 7.2 Acres From Residential 4 (R4) To Planned (PD 38.19/3,000) District For The Property Located East Of Franklin Road And South Of Liberty Pike, Located At 209 Old Liberty Pike (Middle Eight PUD Subdivision).

Sponsors: Emily Wright, Amy Diaz-Barriga

Attachments:
1. MAP Middle Eight PUD
2. ORD 2023-15 An Ordinance to Rezone 7.2 Acres Located at 209 Old Liberty Pike from Residential 4 to Planned District_Combined_Law Approved 05.17.23
3. COF 8155 The Middle 8 Rezoning Plan
4. Citizen Comment emails combined part 1 of 2
5. Citizen Comment emails combined part 2 of 2

Staff:
Amy Diaz-Barriga. Ms. Diaz-Barriga stated that the applicant is requesting to rezone from R4 to Planned (PD 38.19/3,000) District to accommodate the proposed Middle Eight PUD Subdivision. The development has 275 residential units and 3,000 square feet of commercial space. Envision Franklin places this property in the Multifamily Design Concept. Primary uses include multifamily, with single-family and attached residential units as secondary uses. The design team brought forth an Envision Franklin Plan Amendment to the Planning Commission on March 23, 2023, in which they proposed Special Consideration language specific to this site that allowed for the consideration of additional height when underground parking is provided, as well as a small amount of commercial space when it is a use that supports the surrounding community. The Planning Commission approved this requested amendment to Envision Franklin. The Planned District zoning district with proposed entitlements meets the recommendations of Envision Franklin. Ms. Diaz-Barriga finished by stating that staff recommends that the Planning Commission recommend to the Board of Mayor and Aldermen to approve Ordinance 2023-15.

Chair Lindsey explained the procedures for the public comment regarding this item. Chair Lindsey asked each person to come forward to the lectern, state his or her first/last name and address. Each person will have 2 minutes to state his or her concerns regarding this item. Ms. Diaz-Barriga will time each person. Once the bell rings, please wrap up your comments.

Public Comment:

Miles Johnson, 107 Harlinsdale Ct. Mr. Johnson stated that he is in full support of the Middle Eight development. Mr. Johnson explained that after meeting with developers about his adjacent property concerns, he found the developers to be open, honest, and considerate of his specific issues. Because of the development density, Mr. Johnson believes that traffic

will not be a concern as many of the Middle Eight residents will be able to leave their cars and walk or bike ride to their destinations.

Donna Doss, 324 Liberty Pike. Ms. Doss stated that there are many reasons she doesn't support the Middle Eight development. One specific reason is the precedence a development such as Middle Eight will create. Developers from all over the country will attempt to develop small office/studio apartment buildings appealing to those who otherwise would not be able to afford to live in the area. Ms. Doss explained that she fears approval of the Middle Eight development will be the beginning of the end to our quaint small-town Franklin.

Mike Reinfeldt, 119 Jamison Station Lane. Mr. Reinfeldt stated that he is the president of Jamison Station HOA and is in opposition to the Middle Eight development because the development is too high and too dense resulting in more traffic and more flooding. Franklin's brand is one of charm, grace, history, and understatement. The Middle Eight development doesn't match any of these descriptions. Mr. Reinfeldt mentioned the unintended and unexpected consequences of the Middle Eight development. For example, Jamison Station could become a gated community to cut down on the pass-through traffic if this development is approved. The result directly conflicts with the culture and environment of the Factory District.

Thomas Bell, 177 Lancaster Dr. Mr. Bell stated that no one can deny the beauty of the development, but it's too high and too dense for the location. Mr. Bell believes that the development is in direct conflict with the historical guidelines and Envision Franklin. Mr. Bell noted that the community survey resulted in agreement of 2-3 levels as the max height for buildings in the historical overlay. The survey results are from the community, not just the adjacent neighborhoods and property of the Middle Eight development. Mr. Bell asked the Commission to consider a scaled down version of the development that includes 2-3 levels instead of 5-6 levels.

Tom Williams, 213 Old Liberty Pike. Mr. Williams stated that he is opposed to the Middle Eight project because of the traffic concerns. The Middle Eight residents will not be able to make a left turn easily onto Liberty Pike to reach Franklin Road. Mr. Williams explained that the logical route to reach Franklin Road would be to make a right out of the Middle Eight development then a right onto Old Liberty Pike. Old Liberty Pike is a narrow road that many people walk along (no sidewalks) and park their cars. Mr. Williams asked the Commission to consider the potential traffic issues in the area.

John Rossello, 2405 Adair Ct. Mr. Rossello stated that he moved to Franklin a year ago after an extensive year of online real estate search and stands against the Middle Eight project. He moved to Franklin because of the charm and character and purchased a home adjacent to the Eastern Flank battlefield. Mr. Rossello explained that he moved his mother to Franklin because of the lower density and traffic. Mr. Rossello finished by explaining from his experience that mass development brings a lower quality of life, and he does not support the Middle Eight development.

Elizabeth Crockett, 166 Franklin Rd. Ms. Crockett stated that she is not in favor of the Middle Eight project because of the densely packed residential large buildings that are planned. Ms. Crockett invited the Commissioners to visit her neighborhood to see the walkability, charm, and uncongested space that she and her neighbors enjoy. Development of two large buildings as the Middle Eight proposes will change the historic neighborhood forever.

Craig Morrison, 320 Liberty Pike. Mr. Morrison stated that he supports the Middle Eight development because the project addresses the need for more affordable/accessible living space in downtown Franklin. The need continues to increase and citizens must be open to different housing options in the city core. When compared to similar developments in the area, Middle Eight is appropriate as it allows for a balance of green space while accommodating residential choices. Mr. Morrison stated that he has faith in the city staff to make appropriate decisions regarding storm water and other infrastructure related decisions on the Middle Eight that will conform to the expectations of the project. Mr. Morrison finished by stating that it is an exciting time of transformation in this area of Franklin, and he encouraged the Commissioners to approve the Middle Eight project.

Jennifer Morrison, 320 Liberty Pike. Ms. Morrison explained that she has concerns that the negative reactions people have to this project are based on fear. Fear resulting from misinformation and misunderstanding of the facts of the project. Change is difficult but a new vision is needed for successful growth in downtown Franklin, one that doesn't maintain the status quo. A vision that allows for housing opportunities for a multitude of people of different ages and different walks of life. The Middle Eight development provides more accessible housing and aligns perfectly with the proposed Factory District. Ms. Morrison stated that she is grateful to the Commissioners for listening to both sides of the matter.

Heather Black, 61 Anston Park. Ms. Black stated that she is a transplant, originally from Chicago, who moved to Franklin for its charm and historical appreciation. A five to six story building built in the historical overlay doesn't reflect the historical past of the community. Ms. Black explained that more information is needed about how the Middle Eight development will affect flooding.

Paul Lebovitz, 102 Winslow Road. Mr. Lebovitz stated that zoning ordinances exist to preserve personal property and to limit development. Ideally, Mr. Lebovitz would like to see the Middle Eight buildings be no higher than Jamison Station so that the Factory viewshed is protected. Mr. Lebovitz urged the Commissioners not to allow the project to progress further toward final approval.

Peggy Driskill, 162 Franklin Road. Ms. Driskill began by reading a letter from Jessica Sowell. The letter stated that she does not oppose growth and development but stressed the need to protect the charm and historical aspect of Franklin. The letter states that the intentions of the development are positive, but there will be regrets that exceptions have been made to accommodate this project. Lastly, the letter stresses the need for sidewalks along Old Liberty Pike to accompany this development to provide safe areas for pedestrians.

Peggy Driskill, 162 Franklin Road (speaking for herself). Ms. Driskill stated that she is not in favor of the Middle Eight development. Many concerns about traffic, congestion and potential flooding exist because of the size and density of this project. Ms. Driskill also stated concerns about her property value being affected if the Middle Eight is approved by the FMPC.

Tiffany White, 20 Daniels Drive. Ms. White stated that she is a local realtor and has experience in civil engineering. Ms. White is opposed to the Middle Eight development because of its size, density, and scope of the project. Ms. White explained that her main concern revolves around parking and traffic and suggests that the Franklin parking ordinances have been ignored. Ms. White asked if Daniels Drive would be widened if this project is approved. Currently, street parking is the main source of parking which blocks one lane of traffic on Daniels Drive. Ms. White states that she is adamantly against the project and asks the Commissioners to vote no on the Middle Eight project.

Kelsey Sasser, 159 1st Ave N Apt 437. Ms. Sasser stated that she moved to Franklin two years ago after immediately falling in love with the city. Growth has been rapid in two short years, creating more and more traffic congestion. Ms. Sasser has concerns that disabled people will suffer more from the rapid development than others. If there aren't enough parking spaces available, a disabled person cannot park and is therefore unable to engage with friends in a restaurant or participate in the planned activity.

Tangie Lane, 707 Mount Hope St. Ms. Lane explained that she was born and raised in Franklin and is speaking in favor of the Middle Eight project. Ms. Lane stated that she has had the opportunity to read through the proposal documents and she believes the developers have made a wholehearted effort to make Middle Eight the best possible scenario for the City of Franklin and the community. Change is difficult, but it's inevitable and Franklin is not the same place it used to be. Ms. Lane stated that she has had family members move away from Franklin because of the changes. Lastly, Ms. Lane stated that the Middle Eight has been beautifully and thoughtfully developed while also addressing the needs of the city.

Cathy-Jo Elwood, 778 Willow Springs BLVD. Ms. Elwood stated that she owns a business in downtown Franklin and speaks in support of the Middle Eight Project. With the development of the Factory and the sidewalk construction, Middle Eight is a natural and logical next step for this area of Franklin. Affordable residential areas are needed in Franklin to attract young professionals. Lastly, Ms. Elwood asked the Commissioners to please consider these points when voting on the Middle Eight project.

Tammy Lenox, 1101 Downs Blvd #123. Ms. Lenox explained that her 4 children grew up in Franklin serving the community in different ways. Now that these kids are adults getting married and beginning their professional careers, it would be nice if Franklin had choices for affordable housing. Ms. Lenox stated that she would like the Commissioners to allow as much density as possible for the Middle Eight development so that the next generation of young people can raise their children in Franklin.

Katherine Wilson, 206 Franklin Road. Ms. Wilson stated that she is in favor of the Middle Eight development. Ms. Wilson explained that she has reviewed the Middle Eight proposal and believes the variety of residential housing options will be

beneficial to the City of Franklin by attracting young professionals and families.

Buzz Brainard, 320 Liberty Pike #202. Mr. Brainard stated that he is in favor of the Middle Eight development and welcomes it to his neighborhood. Mr. Brainard stated that he has read through the proposal and sees the vision of the developers. The Middle Eight development will support the shops and restaurants at the Factory and is a natural next step for this area of Franklin.

Kristi McClelland, 103 Meridian Ct. Ms. McClelland stated that she is a professor at a local Bible College and a teaching pastor at a local church and has lived in Franklin for 27 years. Ms. McClelland explained that she comes in contact will students and younger members of the church who are desperate to be able to afford housing in Franklin. After reading the proposal and speaking with the Middle Eight developers, Ms. McClelland stated that the extra height of the proposed Middle Eight buildings accommodates square footage for the smaller residential units. The creativity and ingenuity of the developers provide accessible housing for a variety of socio-economic levels. Lastly, Ms. McClelland stated that the developers are willing to take an economic hit to develop affordable residential housing that Franklin desperately needs.

Laura Piraino, 106 Church St. Ms. Piraino stated that she and her husband live in the Brownstones in downtown Franklin. The Brownstones don't have a backyard, but Ms. Piraino explained that she and her husband have found their neighborhood/community in the downtown area by walking nightly, talking to tourists, and shopping in the shops. Ms. Piraino stated that it is the people who make Franklin such an alluring destination with the polite, friendly, and charming attitudes of the residents. The higher housing costs create an exclusivity in Franklin, but with more affordable housing the Middle Eight development will create, more people will be able to enjoy and experience Franklin. For these reasons, Ms. Piraino stated that she is in full support of the Middle Eight development.

Dennis Norvet, 159 North 1st St. Mr. Norvet stated that he has lived in Franklin since 1991 and has owned a home on Fair Street, but now lives in the Harpeth Square Apartments. Mr. Norvet explained that he is in full support of the Middle Eight development and cannot think of better people or better stewards of the land than Toby and Amanda.

Xander Morrison, 159 1st Ave N #247. Mr. Morrison explained that he fell in love with Franklin while in college and made a goal to move to Franklin after college. Mr. Morrison stated that many of his friends who work and go to church in Franklin cannot afford to live in the city. Mr. Morrison is in full support of the Middle Eight because of the affordable housing.

Mike Tanner, 111 Lewisburg Ave. Mr. Tanner stated that he and his wife are in favor of the Middle Eight because it provides an attainable housing choice for young families. The Middle Eight development also offers choices for those who may want to downsize without going into debt.

Meg Blackney, 120 Lucinda Ct. Ms. Blackney stated that she owns a clothing boutique in downtown Franklin. Ideally, she would like to be able to hire employees who are a simple bike ride away instead of commuters from Murfreesboro or Nolensville. Ms. Blackney stated that she supports the Middle Eight project as it supports the goals of the Factory re-development.

Susan Smallwood, 103 Harlinsdale Ct. Ms. Smallwood encouraged everyone who is undecided or unsure about the Middle Eight project to talk to the local professionals regarding flooding, storm water and parking. Ms. Smallwood stated that she is in favor of the Middle Eight development.

Darlene Dyson, 512 Ardmore Place. Ms. Dyson stated that she is in favor of the Middle Eight project so that her children can afford to live and enjoy all the amenities that Franklin has to offer. The development team have created a beautiful project that will complement the Factory.

Benton Smothers, representing The Factory at 230 Franklin Rd. Mr. Smothers explained that there are 50 local businesses that have already or will make their home at the Factory. The Middle Eight project will balance and support the Factory redevelopment. Mr. Smothers stated that the city planning staff and the developers have created a plan that is appropriate for the commercially zoned area without overshadowing the Factory. The Middle Eight project will attract young families and young professionals by providing attainable and affordable housing for Franklin.

Brooke Tanner, 2195 Hartland Rd. Ms. Tanner stated that Franklin is still the charming, friendly, and supportive city it has always been. Change is difficult and the landscape may look different in Franklin, but the people are the same helpful and

supportive group they've always been. Ms. Tanner stated that she experienced this kindness and support firsthand when going through a difficult time.

Dr. Jim Lancaster, 2195 Hartland Rd. Dr. Lancaster explained that he had lived in middle Tennessee for 25 years and moved to Franklin because of its real small-town feel. Dr. Lancaster urged support for the project because of its attainable housing for real people and real families.

Lisa Alexander 160 Lancaster Dr. Ms. Alexander stated that she represents a large group of people who are requesting that the height of the Middle Eight buildings be reduced so that the building is more complementary to the Factory. Ms. Alexander asked those whom she is representing to stand up while she spoke. Ms. Alexander also requested that a new parking study be conducted, and that additional parking be provided for adjacent neighbors of the Middle Eight project. Ms. Alexander explained that the collective group began as a group that completely opposed the Middle Eight project but has evolved into a group requesting a few changes. Lastly, Ms. Alexander stated that the group is in discussions about becoming the North Franklin Neighborhood Association.

Tony Brandy, 24 Daniels Drive. Mr. Brandy stated his concerns about the precedent that will be set if approval is given to the Middle Eight project for higher building height. The next developer will push the height limits of the Middle Eight buildings and so on and so forth. Mr. Brandy talked about how ordinary citizens abide by the ordinances and laws of the city. He asked the Commissioners at what point do the development groups have to follow the rules instead of requesting changes for each element that doesn't fit into their plan.?

Applicant: Gary Vogrin, Kiser Vogrin Designs. Mr. Vogrin stated that he is proud of this development plan and how it meets the intent of the design guidelines along with Envision Franklin guidelines by incorporating diversity in housing, walkability, streetscape, open space, and transition of use. The process has been a lengthy one in which the team has attended HZC meetings, Design Review team meetings, held neighborhood meetings and answered questions in an effort to be forthcoming and honest about the development. Mr. Vogrin thanked the city staff members and the Commission for allowing this time to discuss the project.

Chair Lindsey asked the Commissioners for a motion.

Commissioner Harrison motioned for approval of Resolution 2023-15 to the Board of Mayor and Alderman, seconded by Commissioner Orr.

Discussion:

Commissioner Petersen stated that there isn't a comparable building with a similar density to Middle Eight anywhere within a mile of downtown Franklin. The building is too high and too dense for the downtown area. Ms. Petersen also stated that the impervious area covers most of the ground area, leaving very little pervious areas. Neighbors behind the subject property on Old Liberty Pike struggle with storm water run-off and flooding. Commissioner Petersen stated that considering the storm water run-off and flooding issues that haven't been solved, the Middle Eight development is too overwhelming for this area of Franklin.

Commissioner Harrison stated that to reduce car trips and encourage walkability, there has to be denser housing in the downtown areas to accommodate people so that they can walk or bike ride.

Commissioner Allen stated her concerns about parking, especially the request for a reduction in parking. Speaking from experience, Ms. Allen stated that she would not recommend a reduction in parking. Another concern is the storm water run-off for this area and how the Middle Eight will affect flooding. Lastly, Ms. Allen cautioned people about considering the Middle Eight project as affordable housing. Affordable housing for one person is completely different to what another person may consider affordable housing.

Commissioner Williamson stated that she sees the higher density of Middle Eight development as a positive as it will provide support to the Factory. Businesses in the Factory may struggle during the week and to make the redevelopment of the Factory a success, the Middle Eight project would provide support to the Factory during the off hours.

Commissioner Petersen pointed out that the Middle Eight project would have 38 housing units per acre.

Mr. Vogrin stated that the density of Harpeth Square, a 3-4 story building in downtown Franklin, without the hotel is higher than the Middle Eight density with 3% of open space.
Regarding landscape surface, Mr. Vogrin explained that the Middle Eight project is 10% above the recommended ratio. The city of Franklin requires 20%, so the project has a total of 30% green space. The city of Franklin engineers provided a very thorough report detailing storm water run-off. Mr. Vogrin addressed the parking concerns by explaining the comparable parking study that was conducted in Franklin at other multi-family buildings. The findings showed that in the evenings there are several empty spots available.

Mr. Vogrin stated that the Middle Eight plan has 43% open space with most of the parking residing underground.

Chair Lindsey asked for more information about the dog park and cautioned the developers about the pollution run-off from the dog park. Chair Lindsey also thanked the citizens for their consideration and respect for each other. Each person had compelling reasons why they were for or against the project. Chair Lindsey also pointed out that the Commission has been providing feedback on the height and massing of the plan for months, and asked for clarification on the height of the tallest building.

Mr. Vogrin stated that the requested height of the building is 57.'

Commissioner Allen asked staff for the height of Jamison Station.

Amy Diaz-Barriga responded that staff had not yet completed a survey on the height of that building, but that the application shows it at 54'-6".

Commissioner Lindsay voiced his concern about overflow parking on side streets.

There being no further discussion, Chair Lindsey asked for a roll call vote on the motion to approve Resolution 2023-15.

ACTION:	Motion to Recommend Approval to the Board of Mayor and Aldermen of Ordinance 2023-15, by Commissioner Scott Harrison, seconded by Commissioner Michael Orr; Motion Passed 4-2
AYES:	Scott Harrison, Roger Lindsey, Michael Orr, Jennifer Williamson
NOES:	Marcia Allen, Ann Petersen
ABSTAIN:	None

12. Consideration Of Resolution 2023-30, A Resolution Approving A Development Plan For Middle Eight PUD Subdivision With 1 Modifications Of Development Standards (Parking), For The Property Located East Of Franklin Road And South Of Liberty Pike, Located At 209 Old Liberty Pike.

Sponsors: Emily Wright, Amy Diaz-Barriga

Attachments:

1. MAP Middle Eight PUD
2. Conditions of Approval_01 Middle Eight COF 8154
3. RES 2023-30 A Resolution Approving A Development Plan for Middle_16146_1
4. 1-5 Pages from COF 8154 The Middle Eight Development Plan Resubmittal 05.04.23
5. 6-10 Pages from COF 8154 The Middle Eight Development Plan Resubmittal 05.04.23-2
6. 11-15 Pages from COF 8154 The Middle Eight Development Plan Resubmittal 05.04.23-3
7. 16-20 Pages from COF 8154 The Middle Eight Development Plan Resubmittal 05.04.23-4
8. 21-25 Pages from COF 8154 The Middle Eight Development Plan Resubmittal 05.04.23-5
9. 26-30 Pages from COF 8154 The Middle Eight Development Plan Resubmittal 05.04.23-6
10. 31-35 Pages from COF 8154 The Middle Eight Development Plan Resubmittal 05.04.23-7
11. 36-39 Pages from COF 8154 The Middle Eight Development Plan Resubmittal 05.04.23-8
12. Parking Study - The Middle Eight - Updated
13. Citizen Comment emails combined part 1 of 2
14. Citizen Comment emails combined part 2 of 2

Staff:
Amy Diaz-Barriga: Staff have been meeting with the property owner about development on this site since July of 2022. We have given feedback on the design over the last year, to work towards a plan that meets all the City's development standards. The design team has taken the staff's guidance into consideration and made many changes to the plan over the course of a year. In a few instances, the development team decided to pursue alternate standards prior to submitting this development plan. Below, staff has outlined topics where concern has been voiced regarding the proposed development plan. In general, the plan proposes 254 multifamily dwelling units, 6 single family homes, 12 duplex dwelling units (6 structures), and 3 townhomes. Lastly, it does provide a small amount of retail (3,000 sq ft) in the form of a restaurant, as a use that can support the surrounding community.

Previous Approvals: On February 13, 2023, the development team presented their plan to the Historic Zoning Commission and received a preliminary recommendation for approval on the height, scale, massing, and layout of the structures as it related to the limits of the Historic Preservation Overlay (HPO). It should be noted that the southern facades of the two multifamily buildings, and the single-family and duplex structures south of Foster Lane are outside of the HPO and are not a part of the Historic Zoning Commission's jurisdiction, so the HZC did not consider those facades or buildings in their recommendation. The design team then brought forth an Envision Franklin Plan Amendment to the Planning Commission on March 23, 2023, in which they proposed Special Consideration language specific to this site. The Planning Commission voted to approve the additional specifications.

Building Height: In reviewing the recommendations of Envision Franklin, staff find that the proposed development plan complies with the Multifamily Residential Design Concept. It addresses the design guidelines of the general topics, including providing duplexes, townhomes, and single-family structures along the periphery of the proposed development, and providing a mix of public open spaces. It is also consistent with the language of the special consideration. It provides additional height by proposing underground parking. The height is shown in relation to Jamison Station in the Development Plan, but staff has found that varying technologies and estimating methodologies yield different heights of Jamison Station. The Design Team has consistently stated in previous meetings that the Middle Eight building closest to Jamison Station will be no taller than 2'-6" from Jamison Station's height. Therefore, in the absence of a detailed, surveyed measurement, staff has included a condition of approval that at time of site plan, the heights will be verified and that building plans will ensure that the new construction is no more than 2'-6", measuring from top of parapet to top of parapet. To further ensure that this height comparison is maintained, staff have also included a condition of approval that prior to above-ground construction commencing, an as-built survey will be completed to document the top of foundation elevation. Staff would also like to note that while the Zoning Ordinance and Envision Franklin address transitions between buildings adjacent to new development, it does not speak to proper transitions within a proposed development. There is a three-story change between the north side and south side of Foster Lane, and a significant change in mass between the multifamily buildings and the single-family and duplex units.

Liberty Pike: Regarding other Envision Franklin updates being pursued separately from this development, the Liberty Pike Streetscape improvements are something being investigated through the Factory District Design Concept proposal with the Envision Franklin Update. The decision of whether to create a unique cross-section for Liberty Pike within the boundary of the Factory District has not yet been determined, nor has it been determined whether additional Right-of Way would be needed to achieve an updated cross section. The property owners have confirmed that they wish to include any streetscape elements into their proposal, once decided, and so staff has included a condition of approval (#41 Offsite Improvements) that requires the Middle Eight to incorporate Liberty Pike Streetscape elements into their plans during the site plan approval process.

Parking: Along with the documents just described, the Development Plan also generally conforms to all other regulatory development standard documents; in those instances where the plan currently does not fully comply, staff has provided a list of conditions of approval for the FMPC and BOMA to adopt as part of their vote. The plan does include a shared parking study, to justify the amount of parking provided on site. The plan provides each single-family, duplex, and townhome unit with a two-car garage. The additional third space required for the three-bedroom duplex and townhome units is provided through parallel (on-street) parking adjacent to the properties, along the south side of Foster Lane. Also, a parking study provided by the applicant shows how the difference in peak use time between the multifamily and restaurant uses can provide a parking reduction of 32 spaces. This reduction, along with the proposed reduced parking counts proposed in the Modification of Standards (MOS), account for the required parking for the multifamily and restaurant uses being met by the underground parking structure and the parallel (on-street) parking spaces along the north side of Foster Drive.

Citizen Concerns: It should be noted that citizens have voiced their concerns about this development at several recent public meetings, including Board of Mayor and Aldermen meetings, Planning Commission meetings, and Historic Zoning Commission meetings. Staff collect written comments via email and provide them to the FMPC and BOMA in one single PDF attached to this agenda item. Concerns that have been voiced in the past related to the scale and height of the proposed multifamily buildings and the additional traffic this number of new units would generate, but others may be brought forward in the public hearings for this development plan.

MODIFICATIONS OF STANDARDS The applicant is requesting one Modification of Standards, from Parking Table 10.6, specific to parking requirements for multifamily uses. The request includes a reduction for studio and 1-bedroom units from 1.5 spaces per unit to 1.02 spaces for unit, a reduction for 2-bedroom units from 2.5 spaces per unit to 1.89 spaces per unit, and a reduction for 3-bedroom units from 3.0 spaces per unit to 2.76 spaces per unit. This request, if granted, reduces the number of spaces provided for multifamily use from 529 spaces to 407 spaces, for a reduction of 122 spaces. The applicant has cited nationally recognized Parking Study publications and used only factors that were applicable to our city when analyzing alternate standards. They also gathered parking utilization rates from seven existing multifamily developments in Franklin, to ensure that the national numbers were consistent with the local environment. Staff have verified the parking data from the national publications and can support the reduction as proposed. Staff recommends approval of MOS #1 (Parking).

RECOMMENDATION: Staff recommends that the Planning Commission recommend to the Board of Mayor and Aldermen to approve Resolution 2023-30, with conditions.

Applicant: Gary Vogrin. Mr. Vogrin stated that he agrees with all staff comments other than 91 and 92 relating to building number 2, which is the multi-family building that is adjacent to Jamison Station. Mr. Vogrin asked that this two conditions of approval be removed. At this conceptual stage, it would be difficult to pinpoint the exact height within inches. Building number 2 would not exceed a maximum height of 57 feet.

Public Comment:

Ed Ossi, 118 Lancaster. Mr. Ossi stated that he is a trained geologist, and he would like to know how deep the underground parking garage will go. Mr. Ossi explained that the water table in this area is around 625 feet.

Yates Bateman of Fulmer Engineering, Civil Engineer for the development team. The parking garage will not go any deeper than 640 feet and one inch, which is 15 inches above the water table.

To conclude the Applicant's presentation, Mr.Vogrin reiterated that the applicant is requesting the removal of conditions #91 and 92, and that the maximum height of the building is 57 feet.

Ms. Wright stated that staff comment 91 is based on the preliminary recommendation from the Historic Zoning Commission and any changes to the height would need to be reviewed and approved by the HZC before proceeding to the next stage. The staff review of the minutes, video and proposal documents shows the measurements as Jamison Station at 54’6” and the adjacent Middle Eight building #2 would be 57 feet.

Chair Lindsay asked for a motion.

Commissioner Harrison motioned to recommend approval of Resolution 2023-30 to the Board of Mayor and Alderman with conditions, seconded by Commissioner Orr.

Chair Lindsey stated that when a request for a modification of standards is requested, the MOS will be voted on prior to the main motion. The applicant is requesting one Modification of Standards, from Parking Table 10.6, specific to parking requirements for multifamily uses. The request includes a reduction for studio and 1-bedroom units from 1.5 spaces per unit to 1.02 spaces for unit, a reduction for 2-bedroom units from 2.5 spaces per unit to 1.89 spaces per unit, and a reduction for 3-bedroom units from 3.0 spaces per unit to 2.76 spaces per unit. This request, if granted, reduces the number of spaces provided for multifamily use from 529 spaces to 407 spaces, for a reduction of 122 spaces.

Commissioner Harrison motioned to approve the modification of standards, seconded by Commissioner Williamson.

Commissioner Allen explained that she could not support the MOS for a reduction of 122 parking spaces based on parking reduction mistakes made in the past.

Commissioner Petersen asked if the garage would be gated.

Mr. Antunovich stated that access to the parking garage for retail shopping would be monitored by an attendant.

Ms. Diaz-Barriga asked Mr. Antunovich for more details on how the retail and restaurant parking would flow throughout the day.

Mr. Antunovich stated that residents would have a key fob to gain access to the garage but that retail customers could use garage parking via the parking attendant. There are 33 spaces designated as visitor or guest parking spaces in the parking garage. Some of those spaces are inside of the gate but are accessible via the parking attendant.

Commissioner Orr asked Mr. Vogrin if the restaurant/café would be open to the public.

Mr. Vogrin stated that the café would be open to the public but would mainly be a benefit and convenience for the residents of the Middle Eight.

Commissioner Williamson asked Mr. Vogrin how the aboveground parking spaces will be controlled for the residents.

Mr. Vogrin stated that the developers have consulted with a parking specialist who will advise on how to control use of the parking spaces.
Commissioner Petersen asked for confirmation that the 3-bedroom units will not have a designated 3rd parking space.

Mr. Vogrin stated that Commissioner Petersen was correct.

There being no further discussion regarding the modification of standards, Chair Lindsey asked for a roll call vote on the motion.

ACTION:	Motion to Recommend Approval of MOS-1 to the Board of Mayor and Aldermen, by Commissioner Scott Harrison, second by Commissioner Jennifer Williamson; Motion 4-2
AYES:	Scott Harrison, Roger Lindsay, Michael Orr, Jennifer Williamson
NOES:	Marcia Allen, Ann Petersen
ABSTAIN:	None

Chair Lindsey stated that the main motion would be voted on next.

Mr. Vogrin stated that he wanted to discuss staff comments 91 and 92 further and would like the architect to speak about the specific measurements.

Ms. Billingsly reminded the Commission that they were now in the deliberation stage and the discussion stage was over.

Ms. Diaz-Barriga read the conditions. Comment 92 states that a survey of the height Jamison Station would be necessary during the development plan stage. Comment 91 states that the height of building #2 cannot show a difference of more than 2’ 6” to Jamison Station, as proposed to the Historic Zoning Commission.

Commissioner Petersen asked to view page 2 of the development plan showing the green space. Ms. Petersen asked the applicants if the area was “really” 43% green space.

Ms. Billingsly reminded the Commissioner that they were still in the deliberation stage but at the discretion of the Chair, the applicant could answer a question.

Commissioner Allen called the question and asked the Commission to vote.

Chair Lindsey asked for a roll call vote on the motion.

ACTION:	Motion to Recommend Approval with Conditions to the Board of Mayor and Aldermen Resolution 2-23-3,0 by Commissioner Scott Harrison, second by Commissioner Michael Orr; Motion 4-2
AYES:	Scott Harrison, Roger Lindsay, Michael Orr, Jennifer Williamson
NOES:	Marcia Allen, Ann Petersen
ABSTAIN:	None

SITE PLANS, PRELIMINARY PLATS, AND FINAL PLATS

13. Cool Springs East Subdivision, Site Plan, Section 33, Revision 2, Lot 685 (Comtide Unified Development), Constructing 10,092 Square Feet Of Commercial Building, On 2.65 Acres, Located North Of Market Exchange Court And East Of Comtide Court, At 201 Comtide Court. (CONSENT AGENDA)

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

Attachments:
1. MAP Cool Springs East Subdivision, Site Plan
2. 8162 Cool Springs East Subdivision, Site Plan, Section 33, Revision 2, Lot Conditions of Approval_01
3. 1-5 Pages from Cool Springs East Subdivision, Sec. 33, Rev 2, Lot 685 - Comtide Unified Development Resubmittal 23-05-04
4. 6-10 Pages from Cool Springs East Subdivision, Sec. 33, Rev 2, Lot 685 - Comtide Unified Development Resubmittal 23-05-04-2
5. 11-15 Pages from Cool Springs East Subdivision, Sec. 33, Rev 2, Lot 685 - Comtide Unified Development Resubmittal 23-05-04-3
6. 16-20 Pages from Cool Springs East Subdivision, Sec. 33, Rev 2, Lot 685 - Comtide Unified Development Resubmittal 23-05-04-4
7. 21-25 Pages from Cool Springs East Subdivision, Sec. 33, Rev 2, Lot 685 - Comtide Unified Development Resubmittal 23-05-04-5
8. 26-30 Pages from Cool Springs East Subdivision, Sec. 33, Rev 2, Lot 685 - Comtide Unified Development Resubmittal 23-05-04-6
9. 31-35 Pages from Cool Springs East Subdivision, Sec. 33, Rev 2, Lot 685 - Comtide Unified Development Resubmittal 23-05-04-7

The item was Approved on Consent Agenda.

14. 555 Franklin Road PUD Subdivision, Final Plat, Creating 1 Commercial Lot And 1 Open Space Lot, On 32.83 Acres, Located At 555 Franklin Road. (CONSENT AGENDA)

Sponsors: Emily Wright, Amy Diaz-Barriga, Joseph Bryan

Attachments:
1. MAP 555 Franklin Road PUD Subdivision, Final Plat
2. 8152 555 Franklin Rd PUD FP_Conditions of Approval_01
3. 555 Franklin Rd PUD, Plat

The item was Approved on Consent Agenda.

15. Aureum PUD Subdivision, Final Plat, Section 1, Revision 1 (Lot 5), Creating Two Lots, On 15.24 Acres, Located At The Intersection Of Ovation Parkway And Aureum Drive. (CONSENT AGENDA)

Sponsors: Emily Wright, Amy Diaz-Barriga, Chelsea Randolph

Attachments:
1. MAP Aureum PUD Subdivision, Final Plat, Section 1, Revision 1
2. 8159 Aureum PUD Subdivision, Final Plat, Section 1, Revision 1 (Lot 5) Conditions of Approval_01
3. Aureum PUD Subdivision Sec 1 Rev 1 lot 1 & 5 Final Plat

The item was Approved on Consent Agenda.

16. Lockwood Glen PUD Subdivision, Final Plat, Section 16, Creating 29 Lots, On 5.92 Acres, Located Between Halswelle Drive and S. Carothers Road. (CONSENT AGENDA)

Sponsors: Emily Wright, Amy Diaz-Barriga, Ariella Stanford

Attachments:
1. MAP Lockwood Glen PUD Subdivision, Final Plat, Section 16
2. Lockwood Glen PUD Subdivision, Final Plat, Section 16_Conditions of Approval
3. Lockwood Glen PUD Subdivision, Section 16, Final Plat

The item was Approved on Consent Agenda.

17. Lockwood Glen PUD Subdivision, Final Plat, Section 17, Creating 51 Lots, On 11.77 Acres, Located Between Halswelle Drive and S. Carothers Road. (CONSENT AGENDA)

Sponsors: Emily Wright, Amy Diaz-Barriga, Ariella Stanford

Attachments:
1. MAP Lockwood Glen PUD Subdivision, Final Plat, Section 17
2. Lockwood Glen PUD Subdivision, Section 17, Final Plat_Conditions of Approval
3. Lockwood Glen PUD Subdivision, Section 17, Final Plat

The item was Approved on Consent Agenda.

NON-AGENDA ITEMS

Chair Roger Lindsey asked if there were any non-agenda items to be presented. There were none.

ANY OTHER BUSINESS

Chair Roger Lindsey asked if there was any further business. There was none.

ADJOURN

A motion was made by Commissioner Orr, seconded by Commissioner Allen, to adjourn. The motion carried 6-0.

There being no further business, the meeting adjourned at 09:19 pm.

_____ _____

Chair Date

HISTORIC FRANKLIN TENNESSEE

City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04784

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM:

SUBJECT:

Consideration Of Items 3-12 And 20-22 On The Consent Agenda.

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning

BACKGROUND/STAFF COMMENTS:
(Brief description of the history and supporting information regarding the item, including an explanation of why staff is recommending the action.)

FINANCIAL IMPACT:

(Include the cost of the item, how the item will be funded, which fund it will come from, if there are grants or loans involved and whether the item is included in the current approved budget.)

RECOMMENDATION:

Staff recommends

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04392

DATE: April 19, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Kelly Dannenfelser, Asst. Director of Planning
Andrew Orr, Long Range Planning Supervisor
Teresa Anderson, Principal Planner

SUBJECT:

PUBLIC HEARING: Consideration Of Resolution 2023-010, A Resolution To Adopt An Envision Franklin Plan Amendment For A Parcel Located At 4315 S Carothers Road, Known As Map 089 Parcel 04600, To Change The Design Concepts Map From Mixed Residential To Neighborhood Commercial.
FMPC 3/23/23, Deferred 8-0; 4/27/23, Deferred 8-0

PURPOSE:

Project Information
COF Project Number: 8108
Applicant: Greg Gamble
Owner: Lockwood Sec 9 & 12 LLC

BACKGROUND/STAFF COMMENTS:
The applicant requested to defer this item to the April 27, 2023 FMPC meeting and again to the June 22, 2023 FMPC meeting.

-
This application is to amend the Envision Franklin Design Concepts Map for a 3.96-acre parcel located at 4315 S Carothers Road. The parcel is currently covered mostly with trees and brush along with a stream that flows along the southern border. The property currently has the Mixed Residential Design Concept and is part of the Lockwood Glen PUD. The applicant is requesting the parcel receive the Design Concept of Neighborhood Commercial with a Special Consideration for land use and building scale based on feedback from the surrounding neighborhood over multiple community meetings with the applicant. The Special Consideration reads as follows: Given the proximity to the Lockwood Glen Neighborhood to the south, the uses at this location should be limited to restaurants without a drive-through, office, retail, and personal services, all which emphasize local, small businesses. Buildings should be designed to fit the neighborhood scale at a maximum of 2.5 stories with flat or gable roofs. The Planned District is the appropriate zoning district to implement this vision.

Envision Franklin states that applicant-requested Plan amendments must demonstrate its need and justification for the following criteria:

1. Significant changes have occurred since the adoption of the Plan and necessitate the proposed amendment;
2. Proposal is consistent with the overall intent of the Plan, its guiding principles, desired land-use patterns, the development suitability analysis, and infill maps as applicable;
3. The design is compatible with the design concept of the surrounding area and does not cause an abrupt change in massing, form, or architecture;
4. The proposal does not adversely affect the health and safety of residents or damage the natural environment or scenic quality in contradiction to the Plan; and
5. Substantial improvements in the quality of life for City residents will be achieved.

The staff responses to these criteria are as follows:

1. Since the adoption of Envision Franklin, construction has begun on the parcel to the southwest of this property to build a 188-acre public park and the property directly west of the parcel was rezoned to Neighborhood Commercial and has an approved site plan for commercial uses including a gas station.
2. Neighborhood Commercial on this parcel could meet, or may not directly conflict with, the guiding principles of Envision Franklin. Staff has requested the applicant work with the Lockwood Glen residents to determine acceptable uses that could be included into the Special Consideration for this parcel.
3. The site design included with this application is conceptual and will be fully reviewed in future processes if this request is approved. The Neighborhood Commercial Design Concept requires buildings be compatible with and contribute to neighborhood character and livability, meaning designs would be specifically considered for and catered to the surrounding neighborhoods. Access into and out of the site would create an issue as access would not be supported by the Engineering Department off Carothers Parkway or S Carothers Road and the Lockwood Glen neighborhood is generally not in favor of creating thru traffic via McAvoy Drive to a commercial use.
4. A commercial use would potentially increase traffic through the Lockwood Glen Neighborhood which is generally not supported by the neighbors.
5. Staff believes it is still unclear how and if the nearby residents would benefit from amending Envision Franklin for this property.

The applicant has provided responses to these criteria, which are provided as an attachment to this item in Civic Clerk.

A virtual neighborhood meeting was held on February 7th, 2023. A recording of the meeting is located on the City's website at www.franklintn.gov/neighborhoodmeetings. The meeting was attended by nearby residents of primarily Falcon Creek and Lockwood Glen who seemed to learn about the approved gas station for the first time. Many concerns were then raised about the approved gas station and for the potential for other unwanted businesses to open outside of their neighborhoods or even lack of businesses leading to vacant buildings. They also had concerns over traffic along Carothers Parkway and South Carothers Road and were against the introduction of additional traffic going through the Lockwood Glen neighborhood to access the proposed commercial area. On April 4th, the applicant held an open-house style meeting at the Lockwood Glen Clubouse with nearby residents and has continued to work with the neighbors on the amendment request.

Project Considerations

This parcel sits at the corner of an arterial street and a collector road, which is planned to be signalized following the approval of a gas station and other commercial uses on the west side of Carothers Parkway. A condition of approval for the Lockwood Glen development plan was that access to the corner property is to be through Lockwood Glen via McAvoy Drive with the addition of a bridge over the stream and that no access shall be permitted from either South Carothers Road or Carothers Parkway. This was also under the assumption that any development on that parcel would be one single-family residence. Access to public commercial uses through a residential neighborhood would not be appropriate.

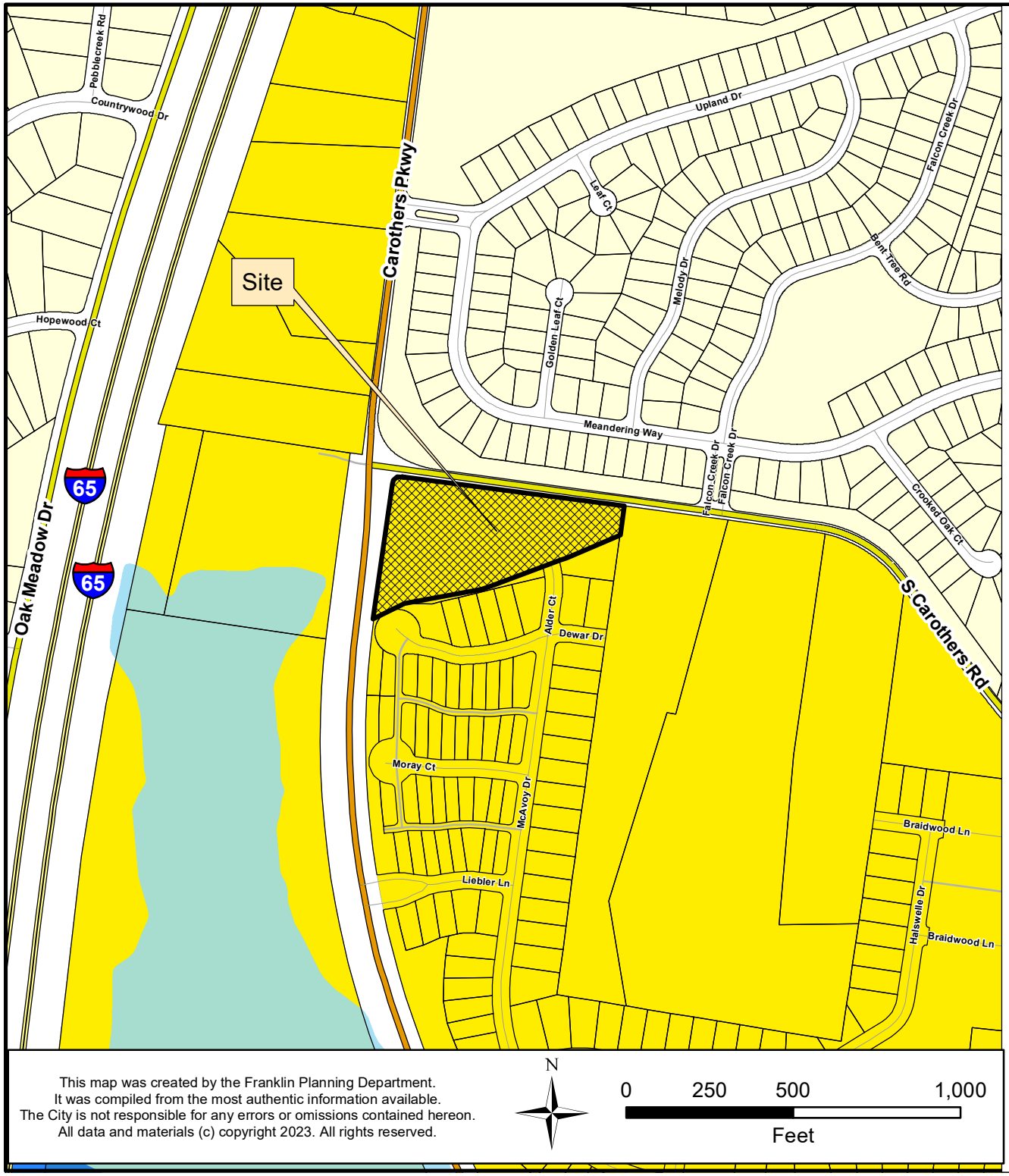
Any plan shown as part of this application is conceptual and has not been reviewed for compliance with Franklin's Zoning Ordinance. Approval of the Envision Franklin plan amendment should not be construed as approval of the conceptual layout, infrastructure or entitlements depicted. Specific plans for any development at this site are reviewed as a part of the future rezoning and Site Plan process to ensure the development meets all requirements.

FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Due to how the site would have to be accessed through a residential street, staff recommends Disapproval of Resolution 2023-010.



This map was created by the Franklin Planning Department.
It was compiled from the most authentic information available.
The City is not responsible for any errors or omissions contained hereon.
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Feet

CAROTHERS NEIGHBORHOOD COMMERCIAL EAST
ENVISION FRANKLIN PLAN AMENDMENT

Project Information
Existing Design Concept: Mixed Residential
Proposed Design Concept: Neighborhood Commercial
Current Land Use: Agriculture
Overlay Districts: None
Site Acreage: 3.78 acres

Legend

- Carothers Neighborhood Commercial East
- Floodway Fringe Overlay
- Floodway Overlay
- Development Reserve
- Recreation
- Conservation
- Conservation Subdivision
- Large-Lot Residential
- Historic Residential
- Compact Residential
- Single-Family Residential
- Office Residential
- Mixed Residential
- Multifamily Residential
- Fifth Avenue North
- Main Street
- Neighborhood Mixed-Use
- Neighborhood Commercial
- Regional Commerce
- Industrial Flex

HISTORIC FRANKLIN TENNESSEE

Carothers Neighborhood Commercial - East

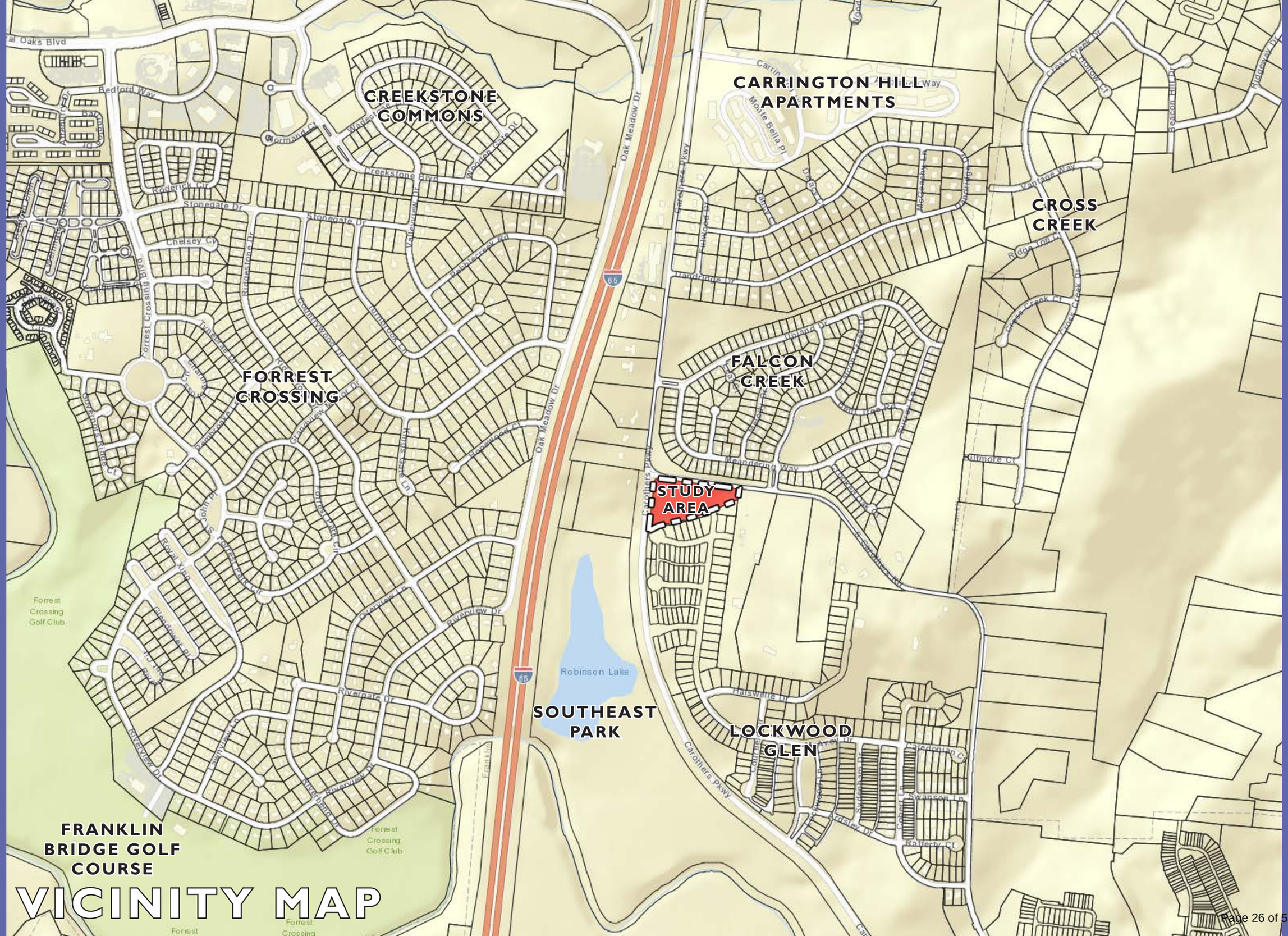
Envision Franklin Amendment

GAMBLE DESIGN COLLABORATIVE

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT



VICINITY MAP

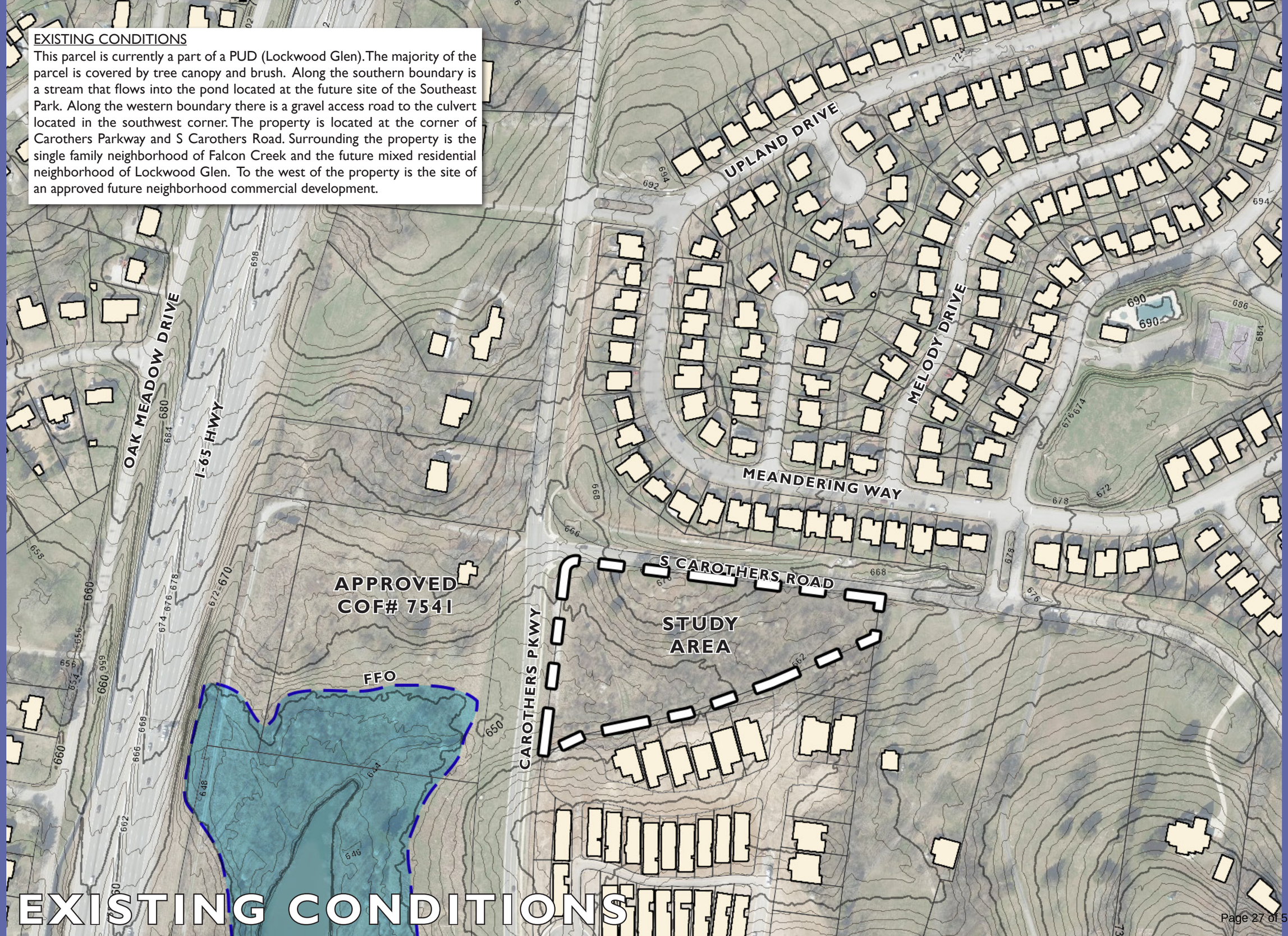
GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT

EXISTING CONDITIONS

This parcel is currently a part of a PUD (Lockwood Glen). The majority of the parcel is covered by tree canopy and brush. Along the southern boundary is a stream that flows into the pond located at the future site of the Southeast Park. Along the western boundary there is a gravel access road to the culvert located in the southwest corner. The property is located at the corner of Carothers Parkway and S Carothers Road. Surrounding the property is the single family neighborhood of Falcon Creek and the future mixed residential neighborhood of Lockwood Glen. To the west of the property is the site of an approved future neighborhood commercial development.

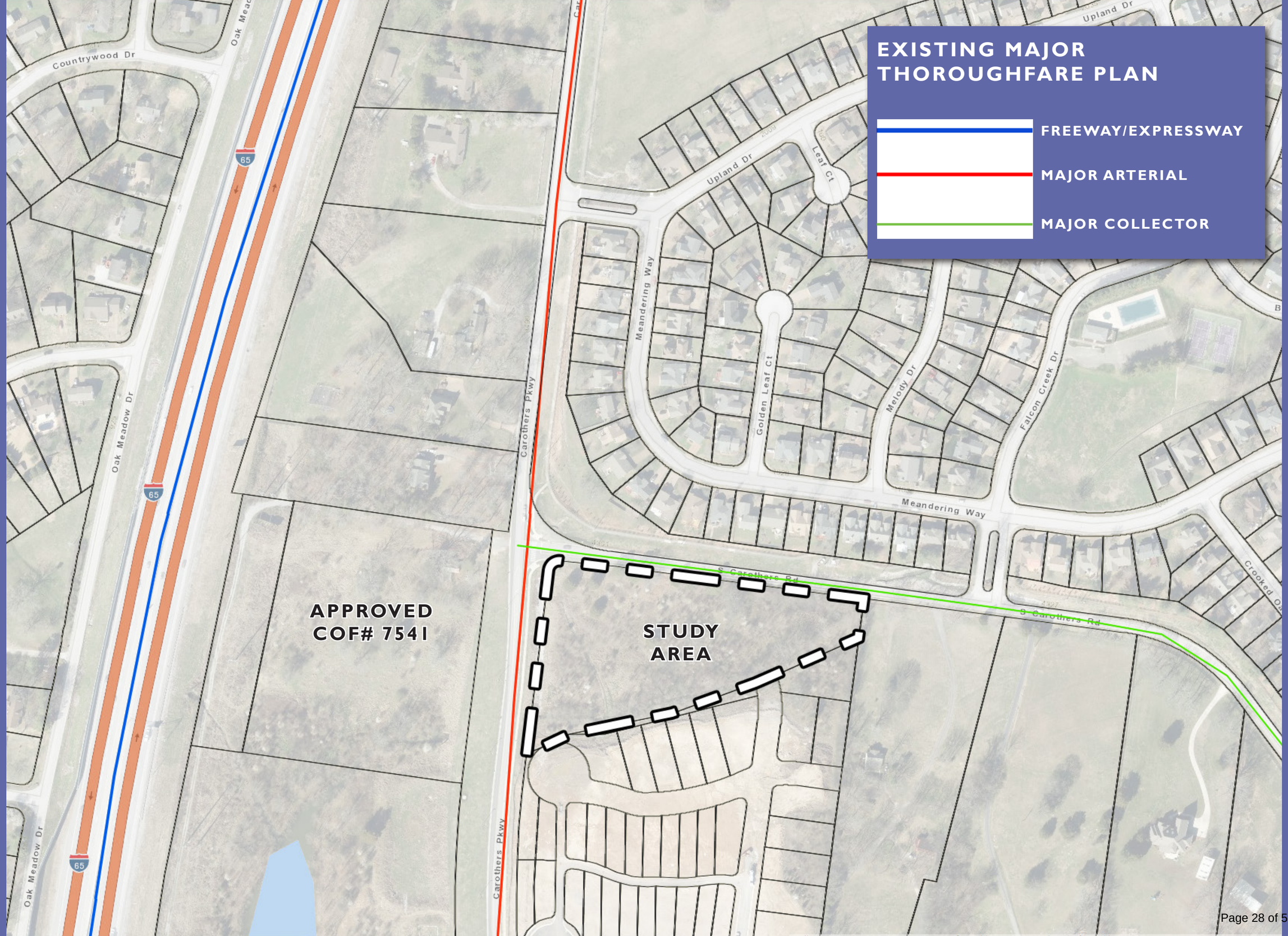


EXISTING CONDITIONS

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT



Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT

GAMBLE DESIGN COLLABORATIVE

EXISTING

PROPOSED

Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT

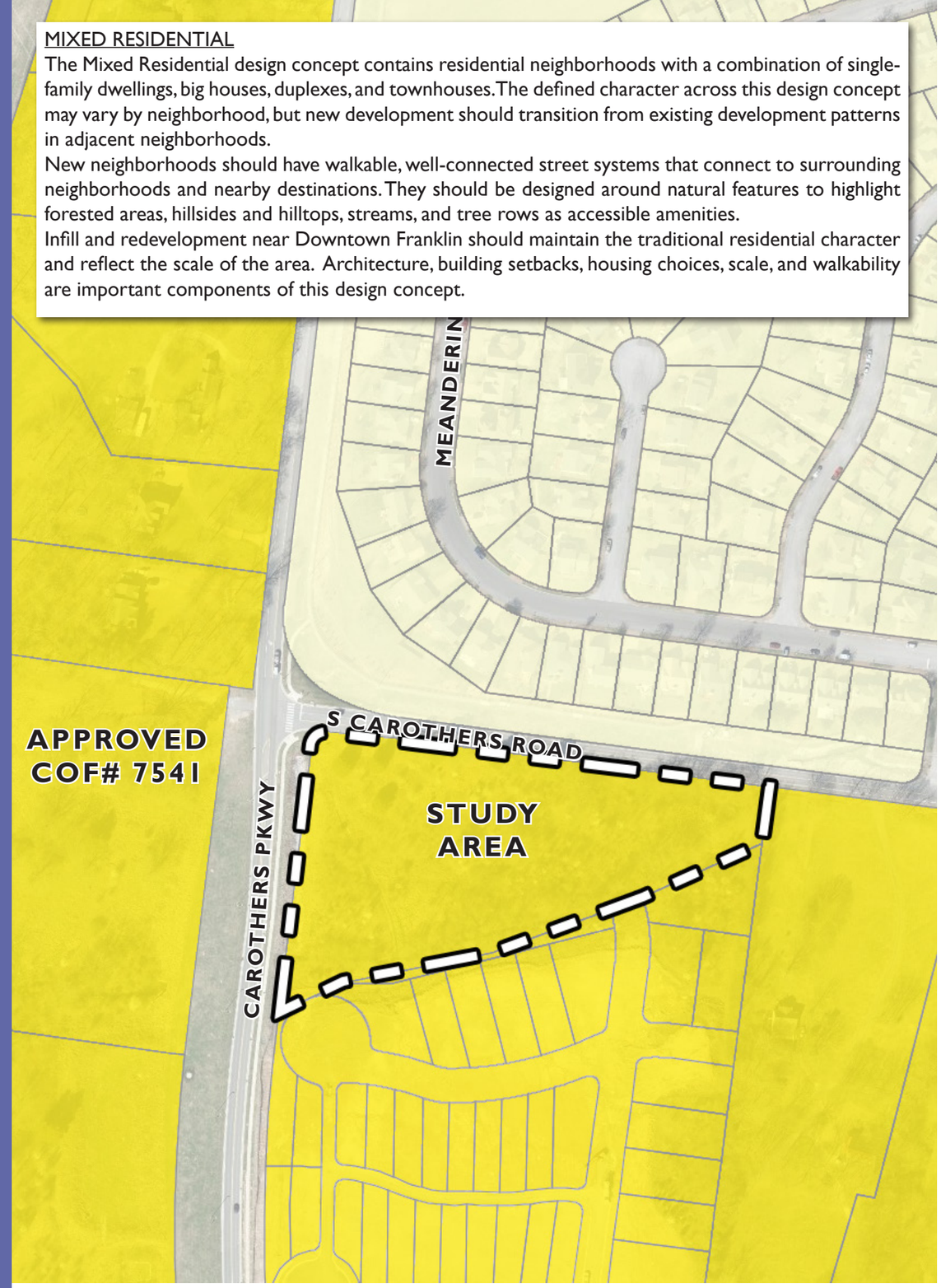
GAMBLE DESIGN COLLABORATIVE

MIXED RESIDENTIAL

The Mixed Residential design concept contains residential neighborhoods with a combination of single-family dwellings, big houses, duplexes, and townhouses. The defined character across this design concept may vary by neighborhood, but new development should transition from existing development patterns in adjacent neighborhoods.

New neighborhoods should have walkable, well-connected street systems that connect to surrounding neighborhoods and nearby destinations. They should be designed around natural features to highlight forested areas, hillsides and hilltops, streams, and tree rows as accessible amenities.

Infill and redevelopment near Downtown Franklin should maintain the traditional residential character and reflect the scale of the area. Architecture, building setbacks, housing choices, scale, and walkability are important components of this design concept.



EXISTING

NEIGHBORHOOD COMMERCIAL

The Neighborhood Commercial design concept contains a mix of active uses at key intersections that serve surrounding residential concentrations. These centers must be compatible with and contribute to neighborhood character and livability. These centers should be defined by building frontages and an activated street, and not by parking lots. They should be pedestrian-friendly places with high-quality architecture, plazas, outdoor dining, sidewalks, and other pedestrian and bicycle amenities that create active, connected gathering places.

PROPOSED

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT

ENVISION FRANKLIN REVISION

The surrounding area has both existing and proposed residential neighborhoods. Directly to the west of the property is an approved neighborhood commercial development. The size, location, and existing conditions of this parcel make the property a poor candidate to ever be developed under the Mixed Residential design concept. This property would serve a better and more meaningful purpose to the surrounding communities as a Neighborhood Commercial design concept. The Neighborhood Commercial design concept would allow this property to serve as a commercial node that is currently missing in this area. Applying the Neighborhood Commercial design concept to this property will improve the vision of this community by creating an area for the surrounding residence to go for commercial needs within a short distance of their homes. Using the guiding principles of managed growth, vibrant neighborhoods, exceptional design, and connected community, a commercial area on this property would be of great value to this community.

COMPATIBILITY WITH EXISTING USES

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT

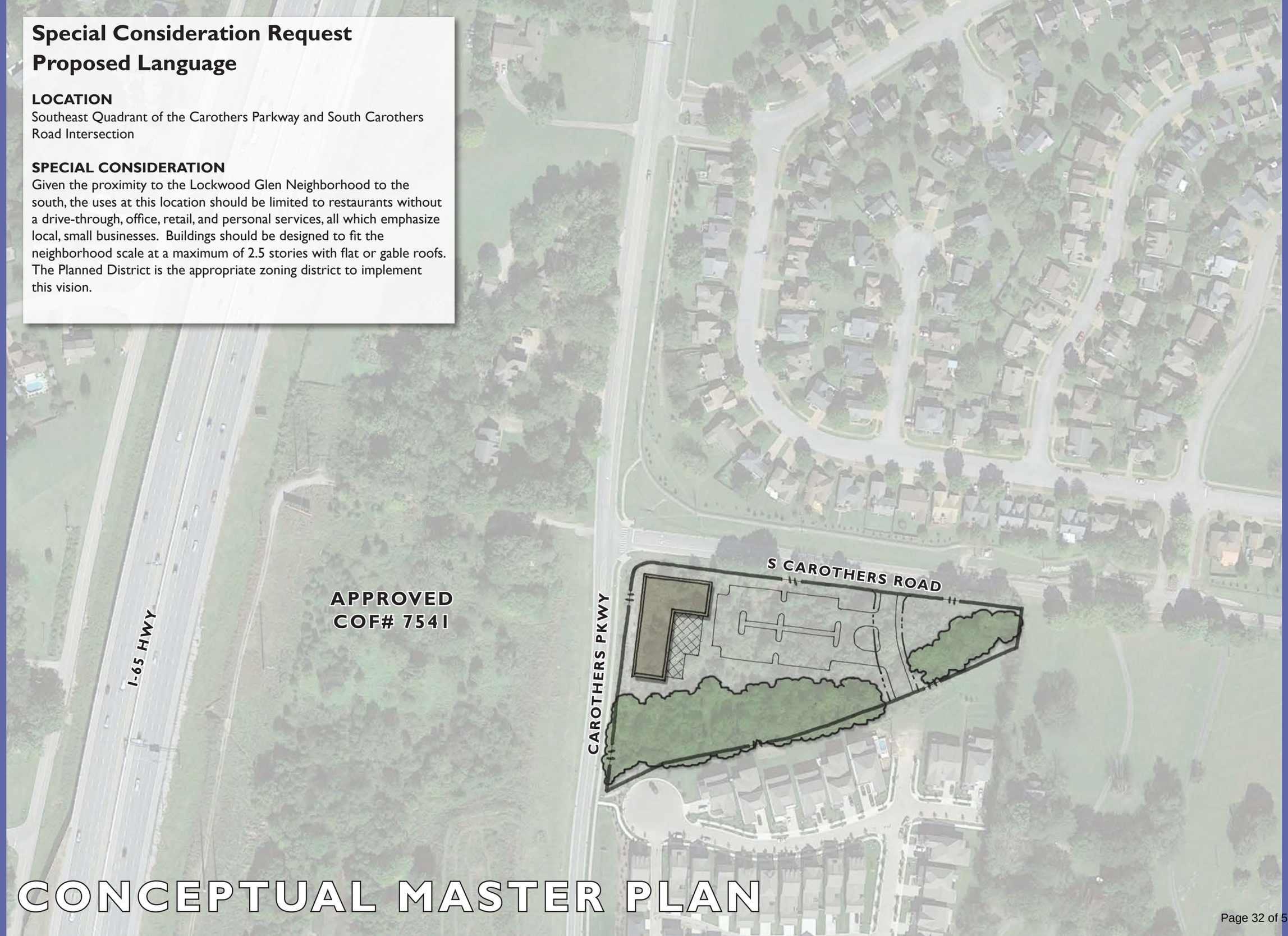
Special Consideration Request
Proposed Language

LOCATION

Southeast Quadrant of the Carothers Parkway and South Carothers Road Intersection

SPECIAL CONSIDERATION

Given the proximity to the Lockwood Glen Neighborhood to the south, the uses at this location should be limited to restaurants without a drive-through, office, retail, and personal services, all which emphasize local, small businesses. Buildings should be designed to fit the neighborhood scale at a maximum of 2.5 stories with flat or gable roofs. The Planned District is the appropriate zoning district to implement this vision.



CONCEPTUAL MASTER PLAN

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT

ARCHITECTURAL CHARACTER

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - East

ENVISION FRANKLIN AMENDMENT

ARCHITECTURAL CHARACTER

RESOLUTION 2023-10

A RESOLUTION TO ADOPT AN ENVISION FRANKLIN PLAN AMENDMENT FOR A PARCEL LOCATED AT 4315 S CAROTHERS ROAD, KNOWN AS MAP 089 PARCEL 04600 TO CHANGE THE DESIGN CONCEPTS MAP FROM MIXED RESIDENTIAL TO NEIGHBORHOOD COMMERCIAL AND ADD A SPECIAL CONSIDERATION

WHEREAS, pursuant to *Tennessee Code Annotated* (T.C.A.) § 13-4-201, it is the function and duty of the Franklin Municipal Planning Commission (FMPC) to adopt an official general plan for the physical development of the City of Franklin; and

WHEREAS, the City adopted *Envision Franklin* on January 26, 2017, and it provides a framework for the City to make land-use decisions, manage the quality of development, determine the timing and location of future growth, and direct investment and development activity; and

WHEREAS, the FMPC may from time to time amend, extend or add to the plan, or carry any part of subject matter into greater detail; and

WHEREAS, the amendment request, as depicted in the attached map, is to change the design concept for the property located at 4315 S Carothers Road, from Mixed Residential to Neighborhood Commercial; and

WHEREAS, a new Special Consideration be established for the property located at 4315 S Carothers Road, as shown in the attached section of Envision Franklin; and

WHEREAS, the FMPC finds that the Plan amendment request has demonstrated its need and justification in accordance with the Implementation Chapter of *Envision Franklin*; and

WHEREAS, the FMPC held a public hearing and the Plan amendment to *Envision Franklin* is found to be in the best interest of the citizens of the City of Franklin.

NOW, THEREFORE, BE IT RESOLVED, by the Franklin Municipal Planning Commission of the City of Franklin, Tennessee, as follows:

SECTION I. The attached Location Map shall serve the purpose of further delineating the geographical boundaries as described by this Resolution.

SECTION II. The Envision Franklin Design Concepts Map is hereby amended as shown by the attached Location Map.

SECTION III. That *Envision Franklin* is hereby amended to include the attached Special Consideration for the Neighborhood Commercial Design Concept.

SECTION IV. A copy of the adopted amendment to Envision Franklin shall be certified to the Board of Mayor and Aldermen, as required by T.C.A. § 13-4-202.

Law Dept approved 06.14.23

SECTION V. That this Resolution shall take effect upon approval by the FMPC on June 22nd, 2023, the health, safety, and welfare of the citizens requiring it.

ATTEST:

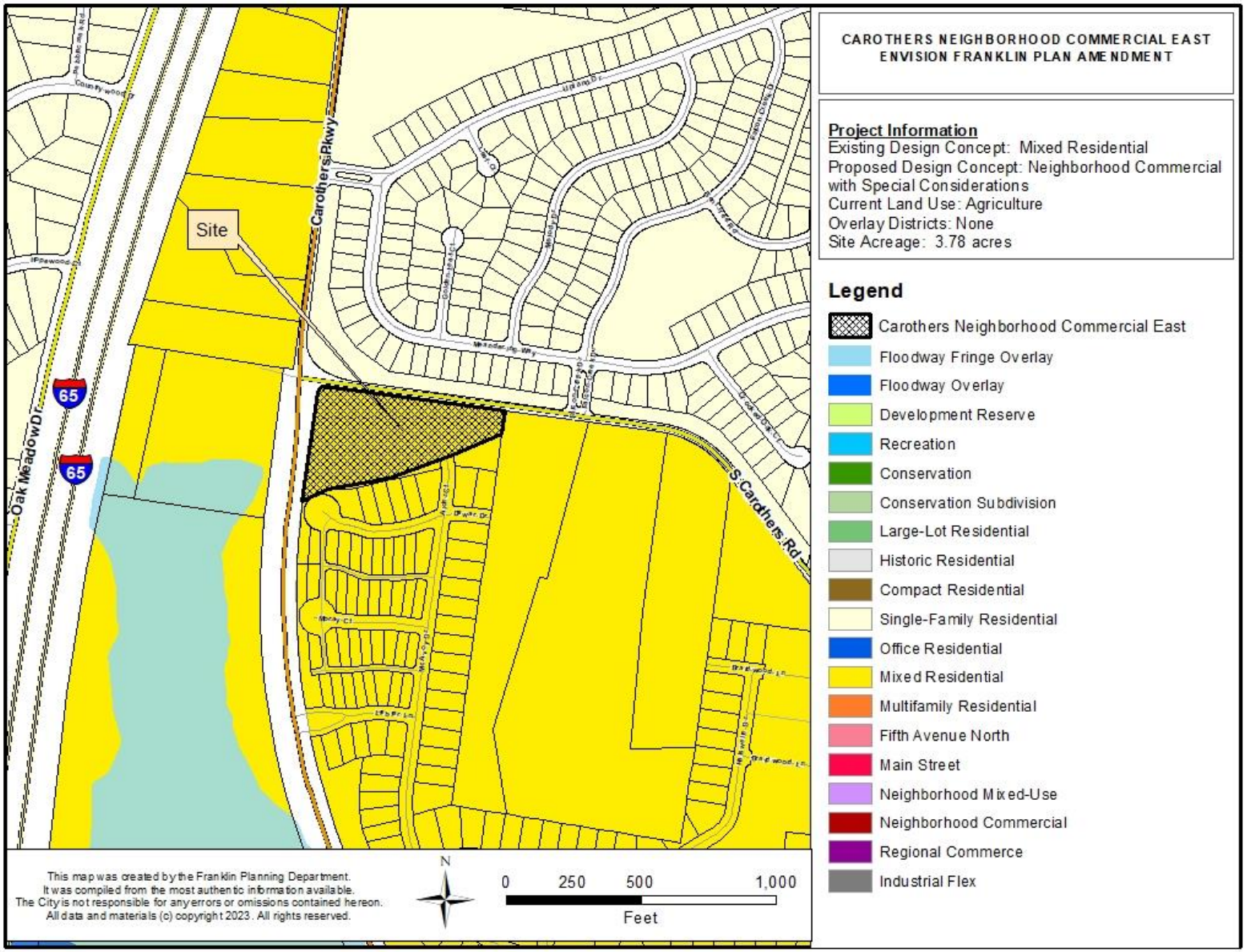
By:_____
Emily Wright
Planning Director

FRANKLIN MUNICIPAL PLANNING COMMISSION:

By:_____
Roger Lindsey
Chair

Approved as to Form:

By: _____
Shauna R. Billingsley
City Attorney


CAROTHERS NEIGHBORHOOD COMMERCIAL EAST
ENVISION FRANKLIN PLAN AMENDMENT
Project Information
Existing Design Concept: Mixed Residential
Proposed Design Concept: Neighborhood Commercial with Special Considerations
Current Land Use: Agriculture
Overlay Districts: None
Site Acreage: 3.78 acres
Legend
Carothers Neighborhood Commercial East
Floodway Fringe Overlay
Floodway Overlay
Development Reserve
Recreation
Conservation
Conservation Subdivision
Large-Lot Residential
Historic Residential
Compact Residential
Single-Family Residential
Office Residential
Mixed Residential
Multifamily Residential
Fifth Avenue North
Main Street
Neighborhood Mixed-Use
Neighborhood Commercial
Regional Commerce
Industrial Flex
Site
Carothers Pkwy
S Carothers Rd
Oak Meadow Dr
65
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It was compiled from the most authentic information available.
The City is not responsible for any errors or omissions contained hereon.
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NEIGHBORHOOD COMMERCIAL

SPECIAL CONSIDERATION	Southeast Quadrant of the Carothers Parkway and South Carothers Road Intersection	Given the proximity to the Lockwood Glen Neighborhood to the south, the uses at this location should be limited to restaurants without a drive-through, office, retail, and personal services, all which emphasize local, small businesses. Buildings should be designed to fit the neighborhood scale at a maximum of 2.5 stories with flat or gable roofs. The Planned District is the appropriate zoning district to implement this vision.

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04393

DATE: April 19, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Kelly Dannenfelser, Asst. Director of Planning
Andrew Orr, Long Range Planning Supervisor
Teresa Anderson, Principal Planner

SUBJECT:

PUBLIC HEARING: Consideration Of Resolution 2023-011, A Resolution To Adopt An Envision Franklin Plan Amendment For Parcels Located At 3453, 3465, 3485, 3513, and 3515 Carothers Parkway, Known As Map 089 Parcels 02611, 02605,02604, and 02600, To Change The Design Concepts Map From Mixed Residential To Neighborhood Commercial.
FMPC 3/23/23, Deferred 8-0; 4/27/23, Deferred 8-0

PURPOSE:

Project Information
COF Project Number: 8108
Applicant: Greg Gamble
Owners: Nickolas Shelton, Dennis Carothers, Bob Thiebold, Kumar Arvind

BACKGROUND/STAFF COMMENTS:
The applicant requested to defer this item to the April 27, 2023 FMPC meeting and again to the June 22, 2023 FMPC meeting.

This application is to amend the Envision Franklin Design Concepts Map for four parcels located at 3453, 3465, 3485, 3513, and 3515 Carothers Parkway. The subject properties are bound by I-65 to the east and Carothers Parkway to the west. A site plan has been approved for a gas station, a day care, and retail uses for the property located at 4309 Carothers Parkway which is immediately south of one of the subject parcels. The properties currently have the Mixed Residential Design Concept, and the applicant is requesting the parcels receive the Neighborhood Commercial Design Concept with a Special Consideration for land use and building scale. The Special Consideration reads as follows: This commercial node should provide services to the growing residential corridor while being designed within the neighborhood scale. The neighborhood scale in this location should include building heights with a maximum of 2.5 stories and should allow both flat and gable roof styles. Recommended uses should include restaurants, office, retail, daycare, and personal services which emphasize local, small businesses. Gas stations, and drive-in quick service restaurants are inappropriate for this area. The Planned District is the appropriate zoning district to implement this vision."

Envision Franklin states that applicant-requested Plan amendments must demonstrate its need and justification for the following criteria:

1. Significant changes have occurred since the adoption of the Plan and necessitate the proposed amendment;
2. Proposal is consistent with the overall intent of the Plan, its guiding principles, desired land-use patterns, the development suitability analysis, and infill maps as applicable;
3. The design is compatible with the design concept of the surrounding area and does not cause an abrupt change in massing, form, or architecture;
4. The proposal does not adversely affect the health and safety of residents or damage the natural environment or scenic quality in contradiction to the Plan; and
5. Substantial improvements in the quality of life for City residents will be achieved.

The staff responses to these criteria are as follows:

1. Since the adoption of Envision Franklin, the property directly south of the subject properties was rezoned to Neighborhood Commercial and subsequently received approval for a site plan containing a gas station. The Carothers Parkway and South Carothers Road intersection will also be signalized.
2. Neighborhood Commercial on these parcels generally meets, or does not directly conflict with, the guiding principles of Envision Franklin.
3. The site design included with this application is conceptual and will be fully reviewed in future processes if this request is approved. The Neighborhood Commercial Design Concept requires buildings be compatible with and contribute to neighborhood character and livability, meaning the designs should be contextual to surrounding neighborhoods.
4. This proposal should not negatively impact the health or safety of residents. The proximity to I-65, the future traffic signal, and the approved fueling station will create a more appropriate environment for commercial uses over residential uses.
5. Staff believes that amending Envision Franklin for these properties could improve the quality of life for residents by providing local commercial uses within walking distance to several neighborhoods.

The applicant has provided responses to these criteria, which are provided as an attachment to this item in Civic Clerk.

A virtual neighborhood meeting was held on February 7th, 2023. A recording of the meeting is located on the City's website at www.franklintn.gov/neighborhoodmeetings. The meeting was attended by many nearby residents of Falcon Creek and Lockwood Glen who seemed to learn about the approved gas station for the first time. Many questions and comments centered around the approved gas station. The neighbors voiced concerns over the potential for unwanted businesses to open outside of their neighborhoods or even lack of businesses leading to vacant buildings. They also had concerns over traffic along Carothers Parkway and South Carothers Road. On April 4th, the applicant held an open-house style meeting at the Lockwood Glen Clubhouse with nearby residents and has continued to work with the neighbors on the amendment request.

Project Considerations

Any plan shown as part of this application is conceptual and has not been reviewed for compliance with Franklin's Zoning Ordinance. Approval of the Envision Franklin plan amendment should not be

construed as approval of the conceptual layout, infrastructure or entitlements depicted. Specific plans for any development at this site are reviewed as a part of future rezoning and site plan process to ensure the development meets all requirements.

FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff Recommends Approval of Resolution 2023-011.

Carothers Neighborhood Commercial - West

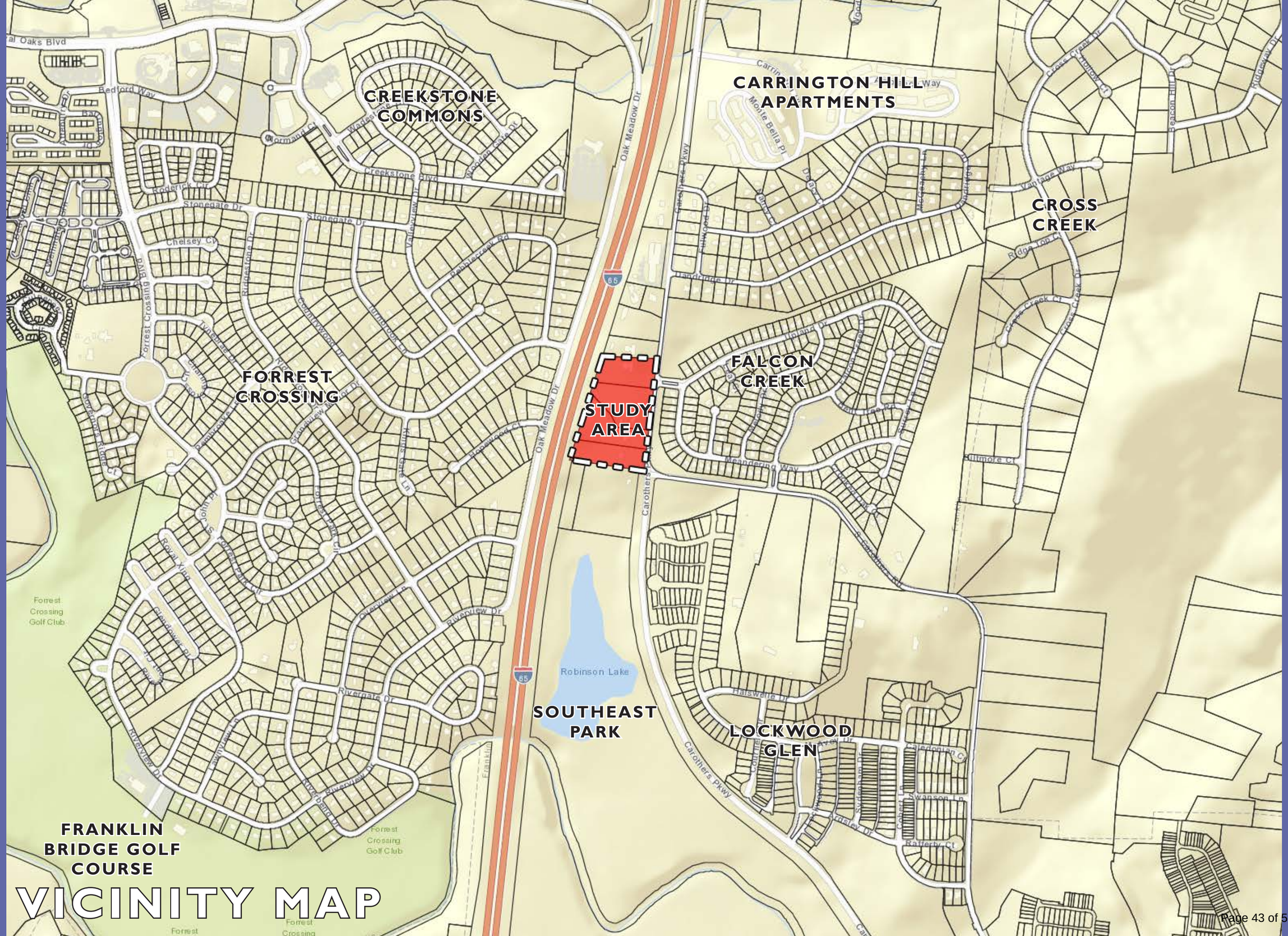
Envision Franklin Amendment

GAMBLE DESIGN COLLABORATIVE

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT



VICINITY MAP

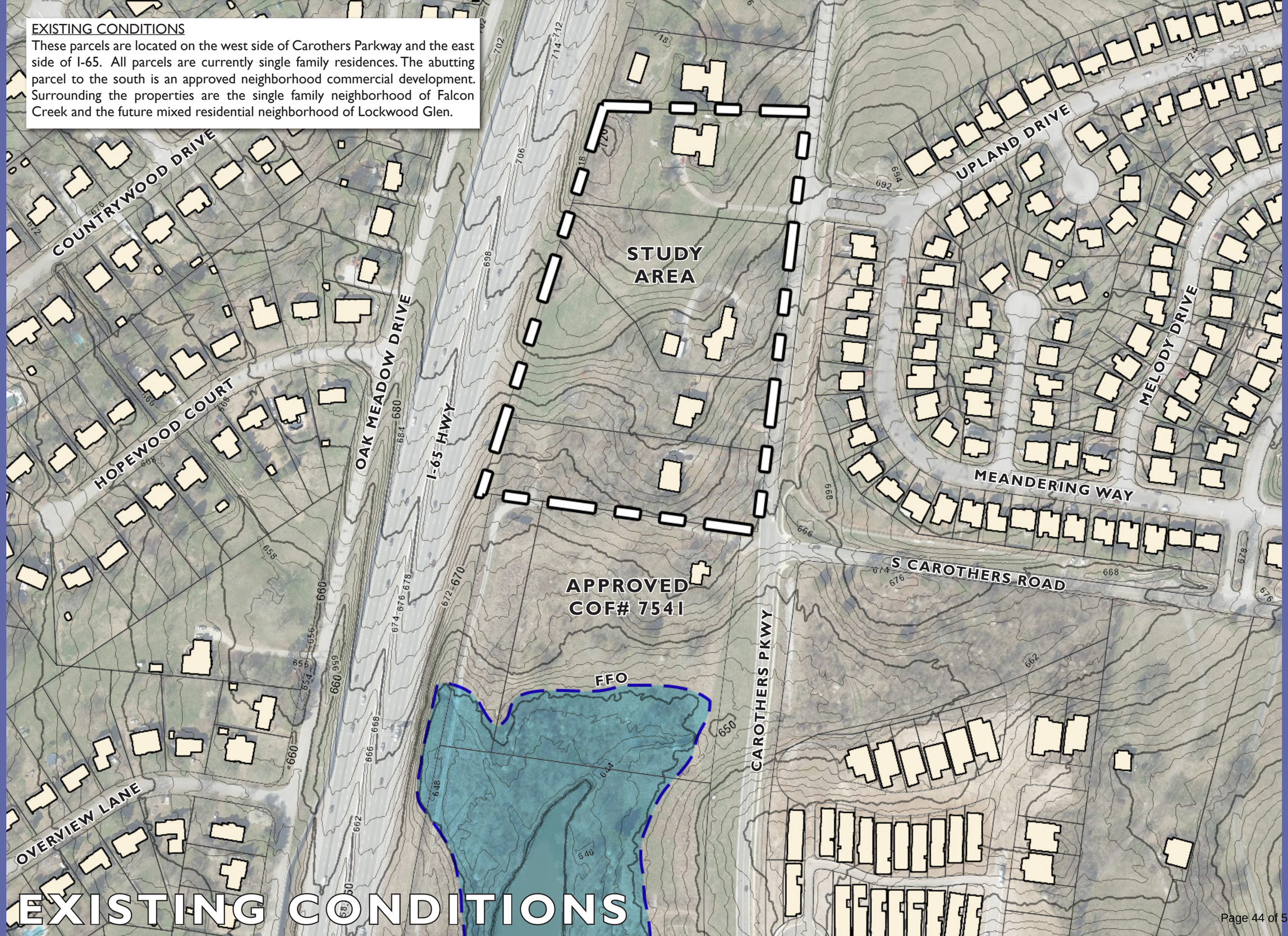
GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT

EXISTING CONDITIONS

These parcels are located on the west side of Carothers Parkway and the east side of I-65. All parcels are currently single family residences. The abutting parcel to the south is an approved neighborhood commercial development. Surrounding the properties are the single family neighborhood of Falcon Creek and the future mixed residential neighborhood of Lockwood Glen.

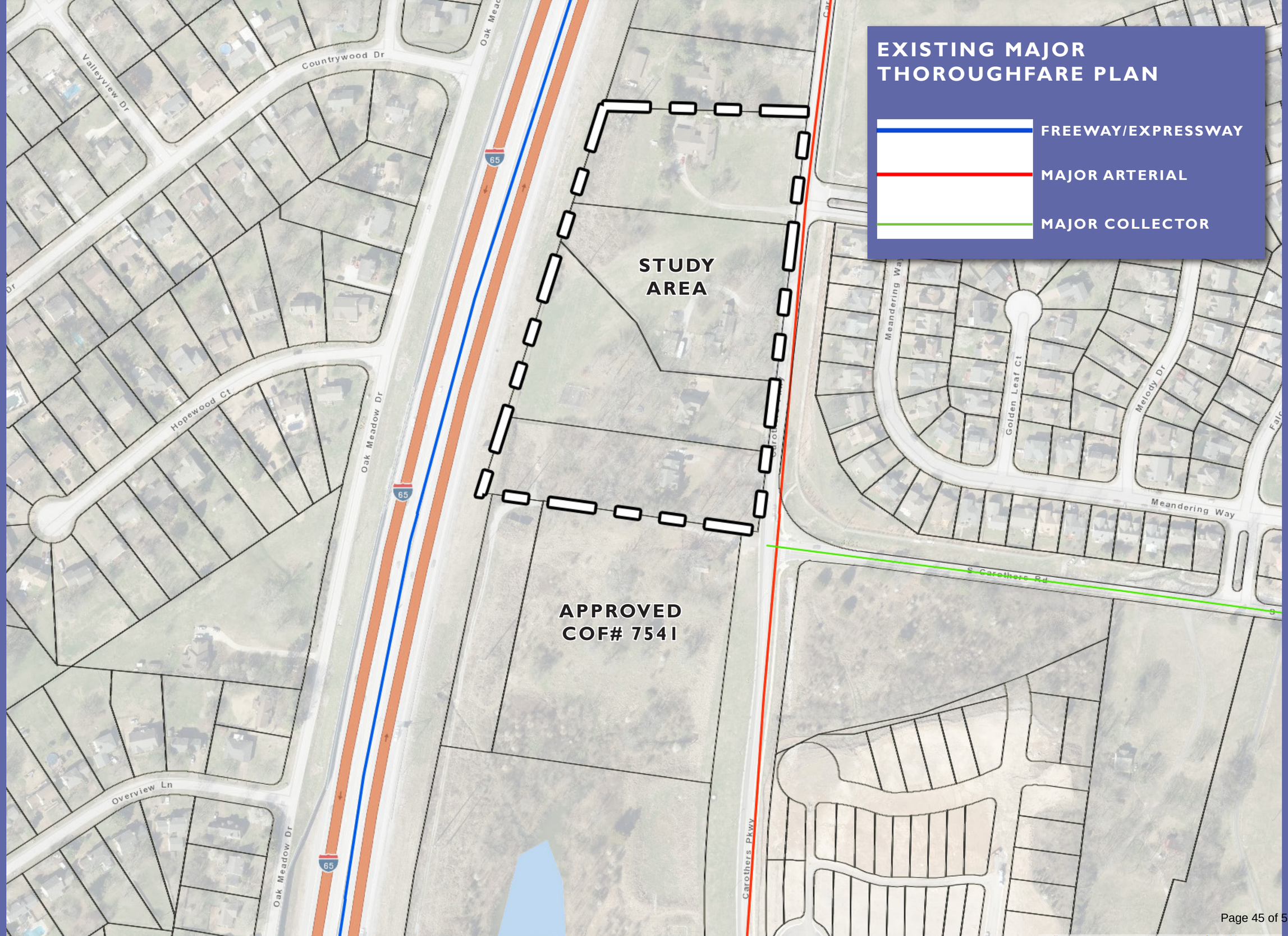


EXISTING CONDITIONS

GAMBLE DESIGN COLLABORATIVE

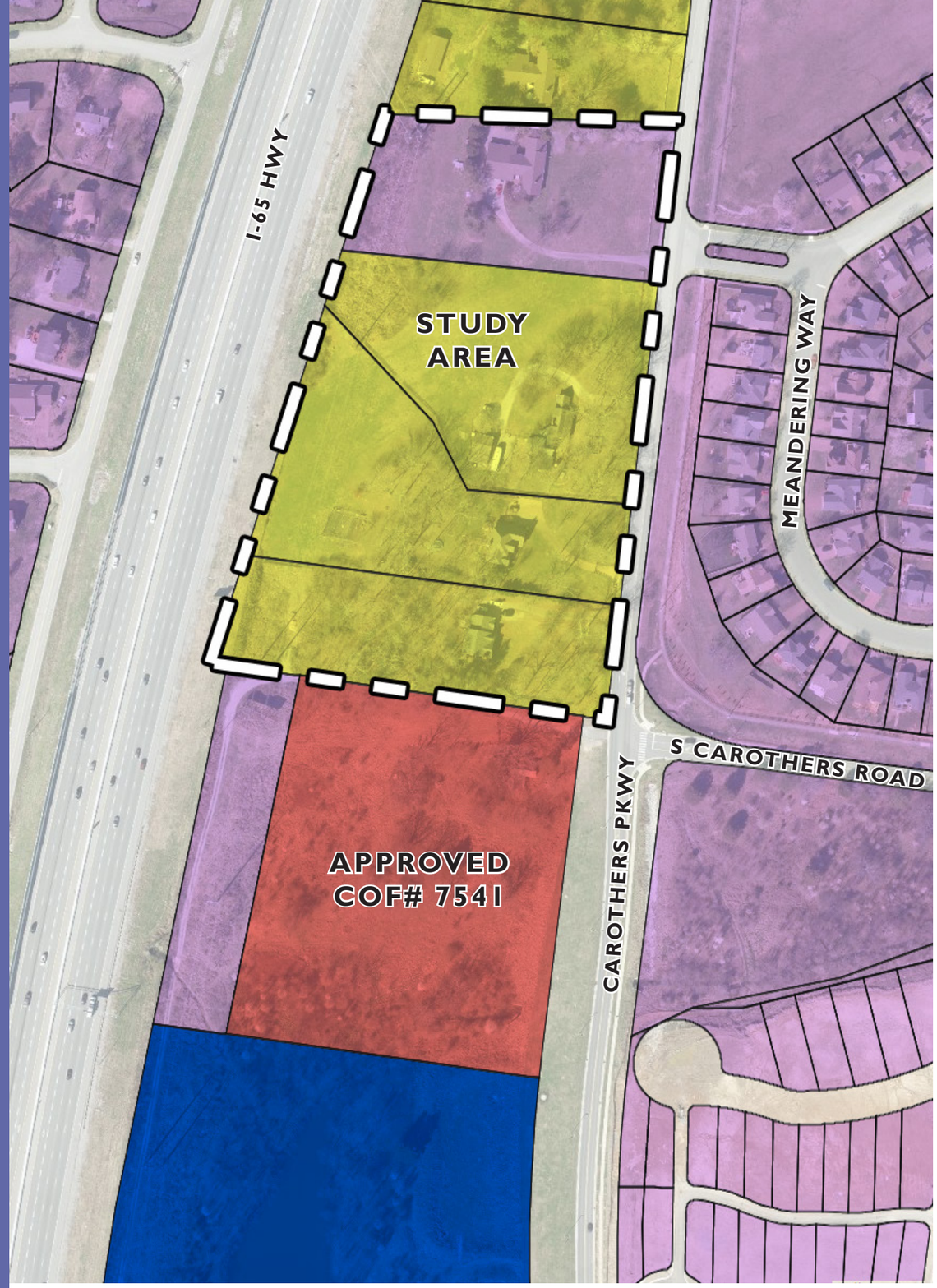
Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT



Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT



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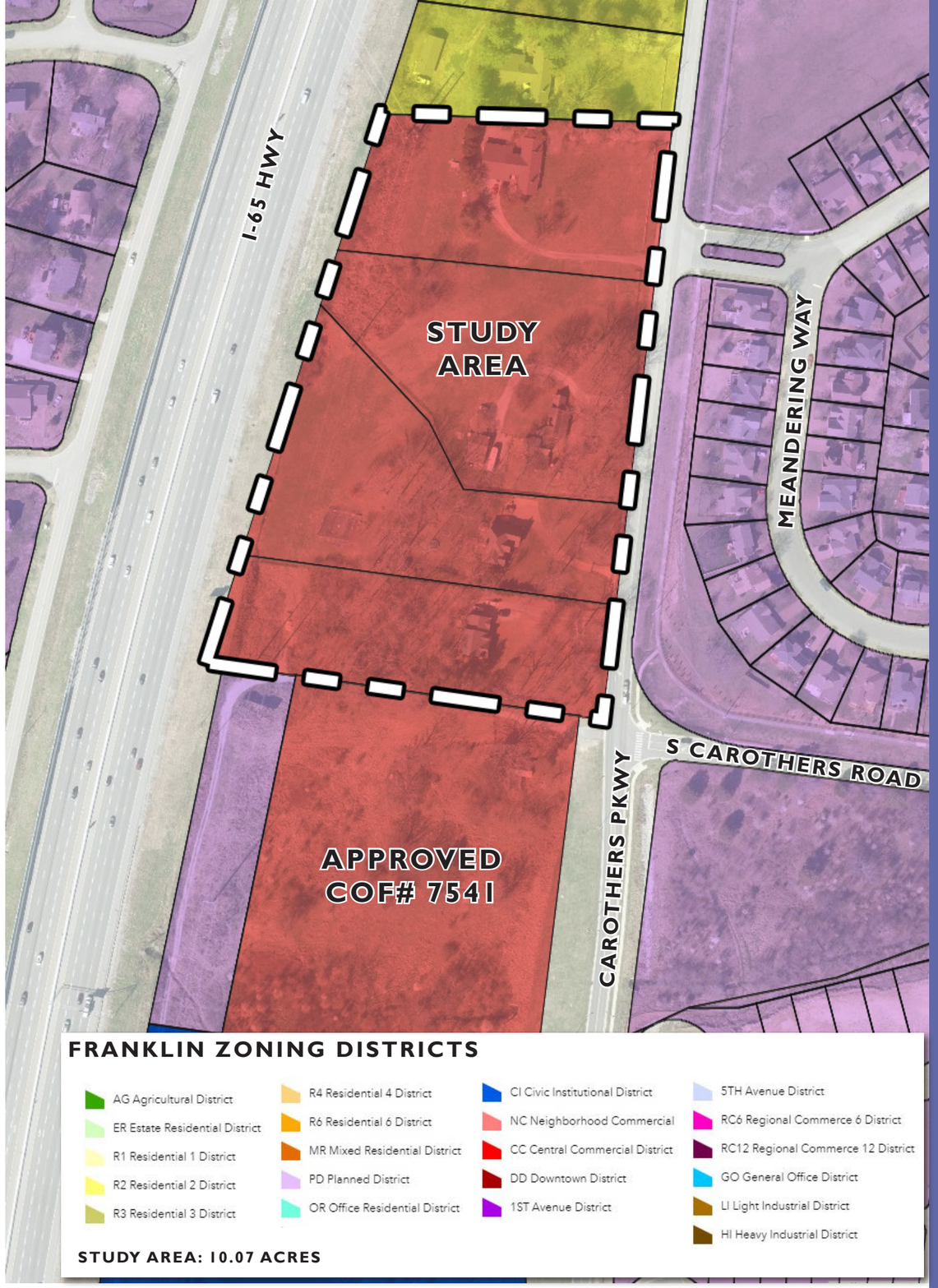


PROPOSED

Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT

MIXED RESIDENTIAL

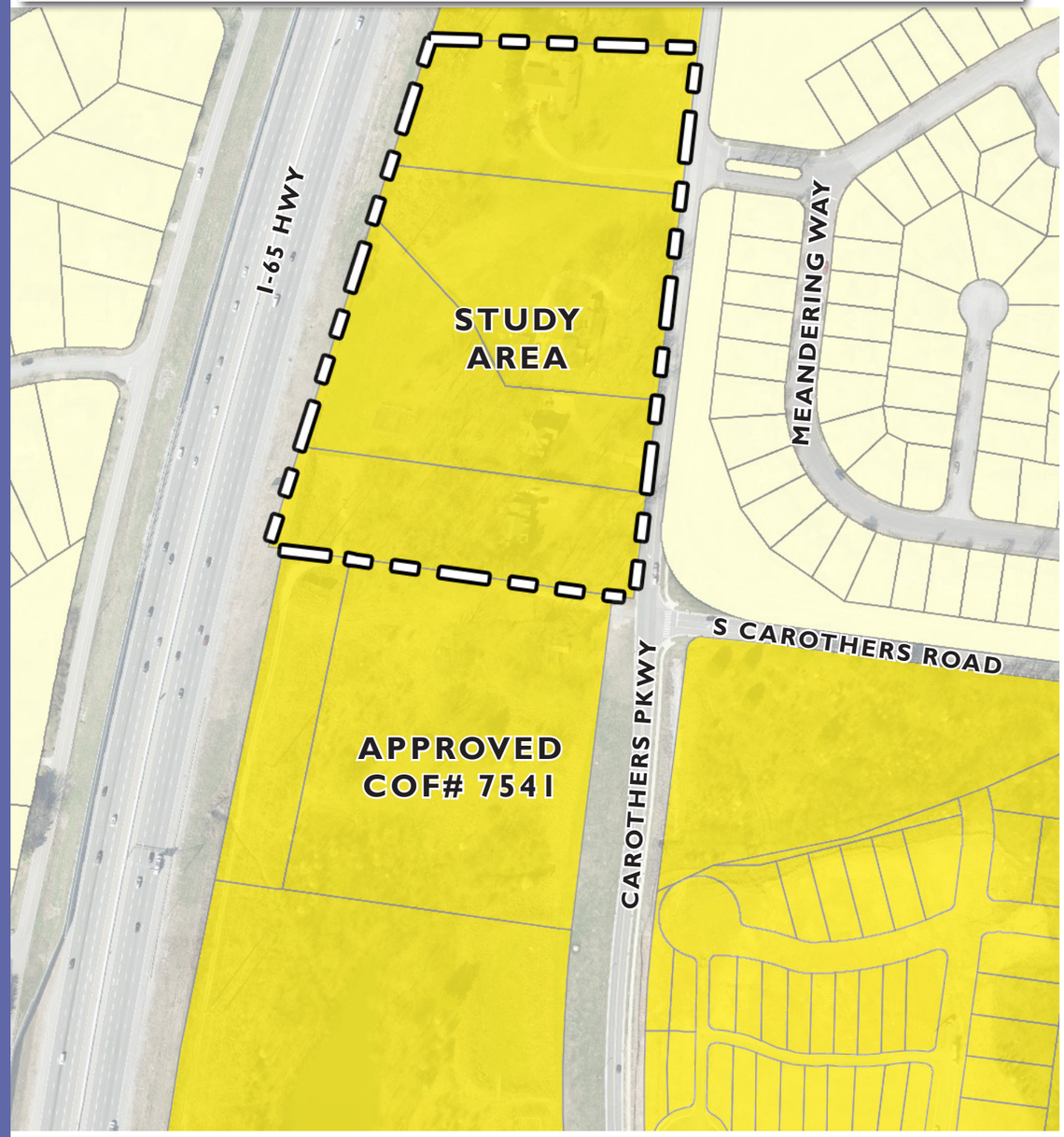
The Mixed Residential design concept contains residential neighborhoods with a combination of single-family dwellings, big houses, duplexes, and townhouses. The defined character across this design concept may vary by neighborhood, but new development should transition from existing development patterns in adjacent neighborhoods.

New neighborhoods should have walkable, well-connected street systems that connect to surrounding neighborhoods and nearby destinations. They should be designed around natural features to highlight forested areas, hillsides and hilltops, streams, and tree rows as accessible amenities.

Infill and redevelopment near Downtown Franklin should maintain the traditional residential character and reflect the scale of the area. Architecture, building setbacks, housing choices, scale, and walkability are important components of this design concept.

NEIGHBORHOOD COMMERCIAL

The Neighborhood Commercial design concept contains a mix of active uses at key intersections that serve surrounding residential concentrations. These centers must be compatible with and contribute to neighborhood character and livability. These centers should be defined by building frontages and an activated street, and not by parking lots. They should be pedestrian-friendly places with high-quality architecture, plazas, outdoor dining, sidewalks, and other pedestrian and bicycle amenities that create active, connected gathering places.



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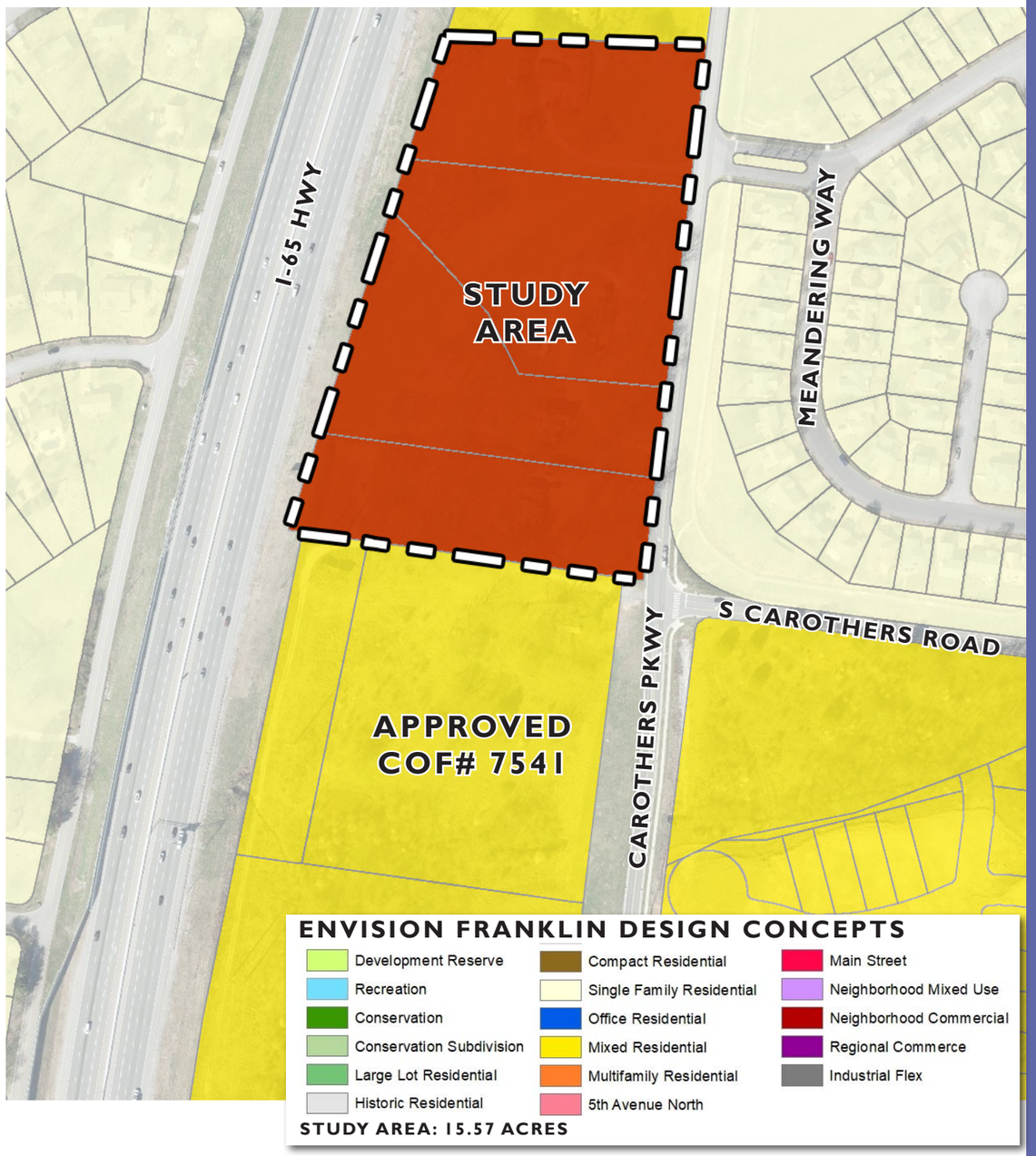


PROPOSED

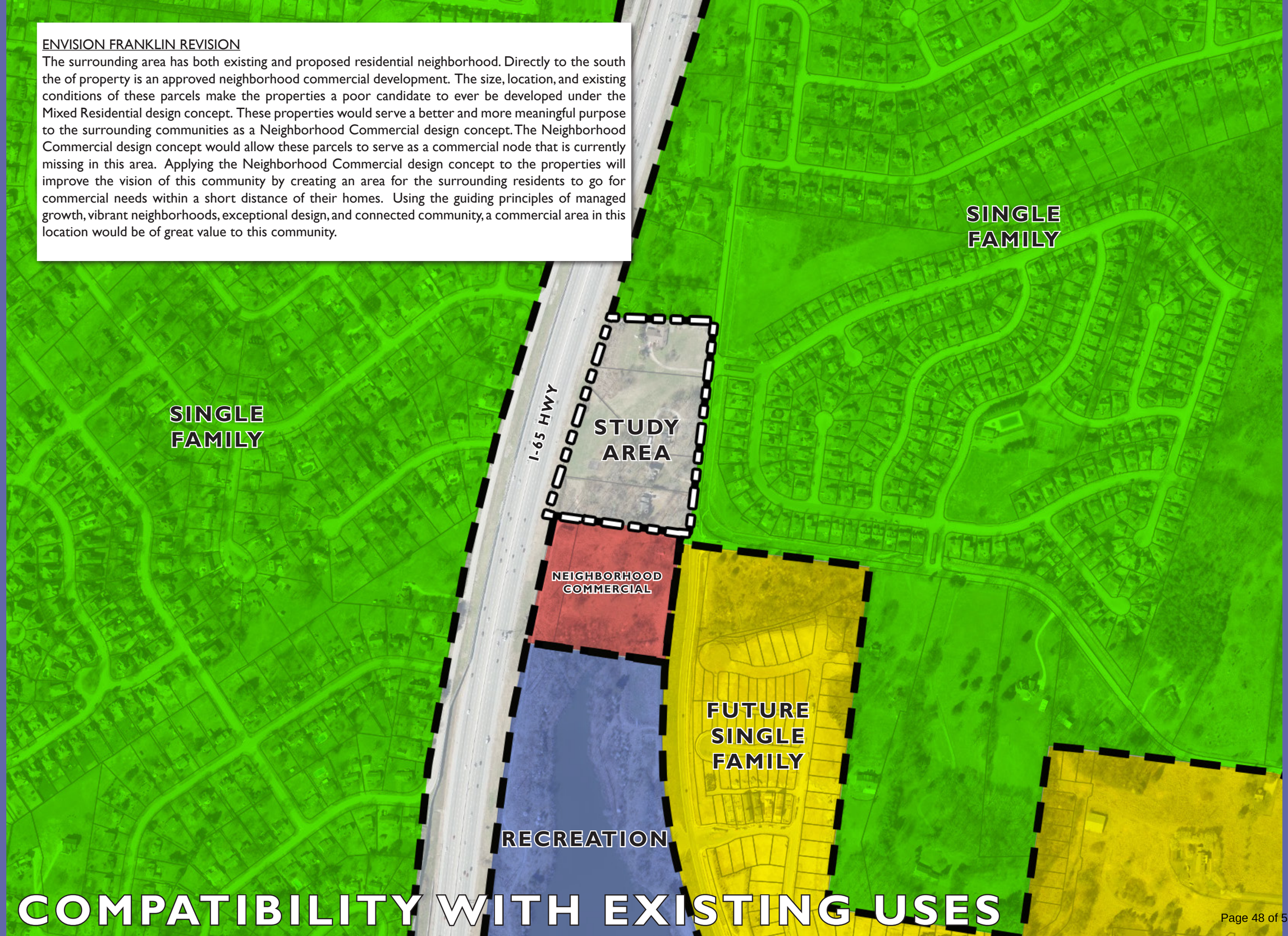
GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT

ENVISION FRANKLIN REVISION

The surrounding area has both existing and proposed residential neighborhood. Directly to the south the of property is an approved neighborhood commercial development. The size, location, and existing conditions of these parcels make the properties a poor candidate to ever be developed under the Mixed Residential design concept. These properties would serve a better and more meaningful purpose to the surrounding communities as a Neighborhood Commercial design concept. The Neighborhood Commercial design concept would allow these parcels to serve as a commercial node that is currently missing in this area. Applying the Neighborhood Commercial design concept to the properties will improve the vision of this community by creating an area for the surrounding residents to go for commercial needs within a short distance of their homes. Using the guiding principles of managed growth, vibrant neighborhoods, exceptional design, and connected community, a commercial area in this location would be of great value to this community.



COMPATIBILITY WITH EXISTING USES

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT

CONCEPTUAL MASTER PLAN

Special Consideration Request Proposed Language

LOCATION

West of Carothers Parkway between Upland Drive and South Carothers Road

SPECIAL CONSIDERATION

This commercial node should provide services to the growing residential corridor while being designed within the neighborhood scale. The neighborhood scale in this location should include building heights with a maximum of 2.5 stories and should allow both flat and gable roof styles. Recommended uses should include restaurants, office, retail, daycare, and personal services which emphasize local, small businesses. Gas stations, and drive-in quick service restaurants are inappropriate for this area. The Planned District is the appropriate zoning district to implement this vision.

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT

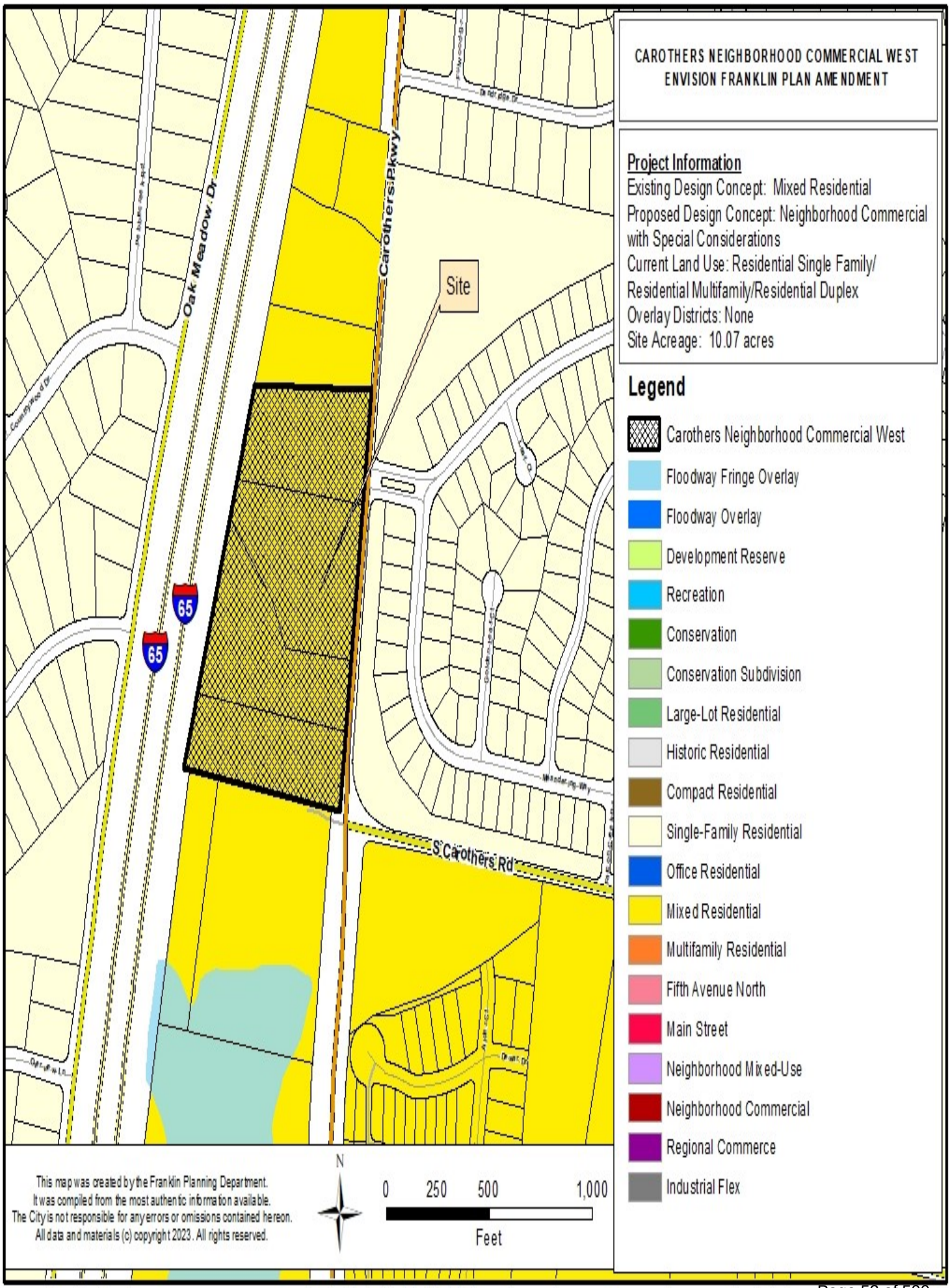
ARCHITECTURAL CHARACTER

GAMBLE DESIGN COLLABORATIVE

Carothers Neighborhood Commercial - West

ENVISION FRANKLIN AMENDMENT

ARCHITECTURAL CHARACTER


CAROTHERS NEIGHBORHOOD COMMERCIAL WEST
ENVISION FRANKLIN PLAN AMENDMENT
Project Information
Existing Design Concept: Mixed Residential
Proposed Design Concept: Neighborhood Commercial with Special Considerations
Current Land Use: Residential Single Family/ Residential Multifamily/Residential Duplex
Overlay Districts: None
Site Acreage: 10.07 acres
Legend
Carothers Neighborhood Commercial West
Floodway Fringe Overlay
Floodway Overlay
Development Reserve
Recreation
Conservation
Conservation Subdivision
Large-Lot Residential
Historic Residential
Compact Residential
Single-Family Residential
Office Residential
Mixed Residential
Multifamily Residential
Fifth Avenue North
Main Street
Neighborhood Mixed-Use
Neighborhood Commercial
Regional Commerce
Industrial Flex
Site
Oak Meadow Dr
Carothers Pkwy
S Carothers Rd
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RESOLUTION 2023-11

A RESOLUTION TO ADOPT AN ENVISION FRANKLIN PLAN AMENDMENT FOR PARCELS LOCATED AT 3465,3485,3513,3515, AND 3535 CAROTHERS PARKWAY, KNOWN AS MAP 089 PARCELS 02611, 02605,02604, AND 02600, TO CHANGE THE DESIGN CONCEPTS MAP FROM MIXED RESIDENTIAL TO NEIGHBORHOOD COMMERCIAL AND ADD A SPECIAL CONSIDERATION

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Law Dept approved 06.14.23

SECTION V. That this Resolution shall take effect upon approval by the FMPC on June 22nd, 2023, the health, safety, and welfare of the citizens requiring it.

ATTEST:

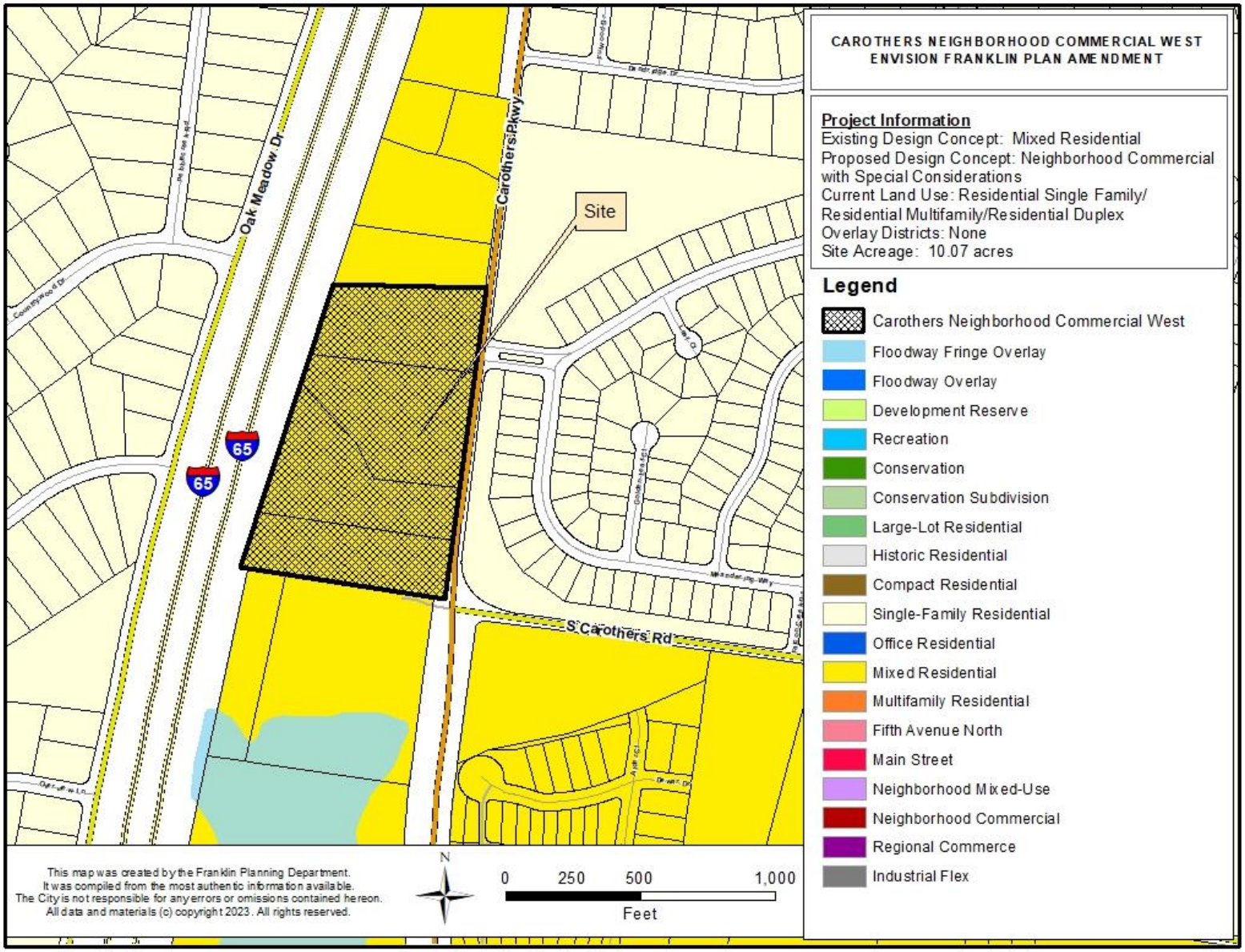
By:_____
Emily Wright
Planning Director

FRANKLIN MUNICIPAL PLANNING COMMISSION

By:_____
Roger Lindsey
Chair

Approved as to Form:

By: _____
Shauna R. Billingsley
City Attorney


CAROTHERS NEIGHBORHOOD COMMERCIAL WEST
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NEIGHBORHOOD COMMERCIAL

SPECIAL CONSIDERATION	West of Carothers Parkway between Upland Drive and South Carothers Road	This commercial node should provide services to the growing residential corridor while being designed within the neighborhood scale. The neighborhood scale in this location should include building heights with a maximum of 2.5 stories and should allow both flat and gable roof styles. Recommended uses should include restaurants, office, retail, daycare, and personal services which emphasize local, small businesses. Gas stations, and drive-in quick service restaurants are inappropriate for this area. The Planned District is the appropriate zoning district to implement this vision

HISTORIC FRANKLIN TENNESSEE

City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-03272

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Amy Diaz-Barriga, Asst Director of Planning Development
Chelsea Randolph, Principal Planner

SUBJECT:

Consideration Of Resolution 2023-49, A Resolution Adopting A Plan Of Services For The Annexation Of Property Located South Of The Intersection Of Peytonsville Road And Pratt Lane, Outside Of The Southeastern Part Of The Franklin Urban Growth Boundary (UGB), By The City Of Franklin, Tennessee.

PURPOSE:

PROJECT INFORMATION
COF Project Number:8187
Applicant: Greg Gamble, Gamble Design Collaborative
Owner: Dinesh Reddt Ramreddy Gari, Radhika Kotagiri, Venu Alokam, and Krishna Alapati with Venkusa LLC

BACKGROUND/STAFF COMMENTS:
In May 2018, a BOMA Special Work Session was held to present and discuss annexation and growth priorities. Two drainage basins were identified as having short-term capability for annexation—the West Basin and the Goose Creek Basin. Additionally, the potential land uses that would be planned within the Goose Creek Basin would likely be a combination of commercial, office, and residential, due to the property's proximity to I-65 and major corridor extensions, such as Carothers Parkway. The BOMA adopted a resolution in March 2021 to proceed with a study of land uses, infrastructure, and road network for the Goose Creek Basin.

The City has received an annexation request for a property in the Goose Creek Basin that is located outside of the UGB, located South of the Intersection Of Peytonsville Road and Pratt Lane (4436 Pratt Lane). A map of the property is attached. The plan of services outlines how the City will serve the property should it be annexed and gives any considerations for future development. The property is served by the Milcrofton Water District. Development of the property will require extension of the sanitary sewer main. Access to the property shall be provided from Pratt Lane. As the property develops, street improvements may be required. No additional manpower or equipment will be necessary for either Fire, Police Protection, or Sanitation. Since this property lies outside the Urban

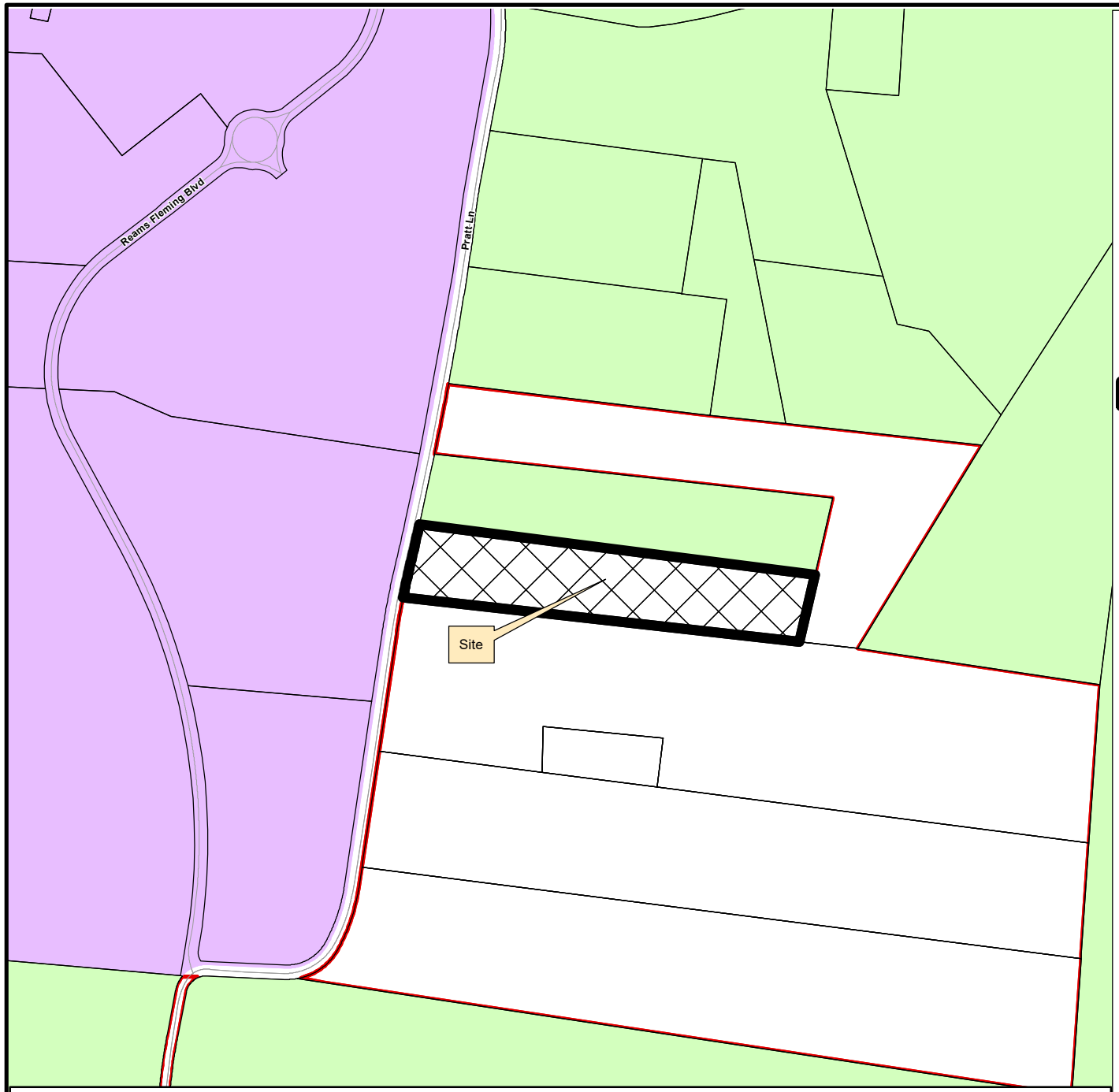
Growth Boundary (UGB), long-range city plans will need to be updated prior to future rezonings and development plans.

FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff recommends that the Planning Commission recommend to the Board of Mayor and Aldermen to approve Resolution 2023-49.



4436 PRATT LANE
ANNEXATION, PLAN OF SERVICE, AND ZONING
ORDINANCE 2023-24
RESOLUTION 2023-49
RESOLUTION 2023-48

Project Information
Existing Land Use: Vacant
Proposed Land Use: Single-Family
Proposed Zoning: ER, Estate Residential
Site Acreage:5 acres

Legend

- Subject Property
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
- RC12 Regional Commerce 12 District
- GO General Office District
- LI Light Industrial District
- HI Heavy Industrial District

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N

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Feet

HISTORIC FRANKLIN TENNESSEE

RESOLUTION 2023-49

A RESOLUTION ADOPTING A PLAN OF SERVICES FOR THE ANNEXATION OF PROPERTY, LOCATED AT 4436 PRATT LANE, OUTSIDE OF THE SOUTHEASTERN PART OF THE FRANKLIN URBAN GROWTH BOUNDARY (UGB), BY THE CITY OF FRANKLIN, TENNESSEE

WHEREAS, Tennessee Code Annotated (T.C.A.) § 6-51-102, as amended, requires that a Plan of Services be adopted by a municipal governing body prior to an annexation; and

WHEREAS, the property owners as listed below petitioned the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee (City), to annex one (1) parcel, containing 5 acres, located outside of the Franklin Urban Growth Boundary (UGB); and

WHEREAS, the Properties are located at 4436 Pratt Lane, as described herein and as depicted on the Map attached hereto as Exhibit A:

Map	Parcel	Acreage	Address	Owner
117	42.06	5	4436 Pratt Lane	Dinesh Reddy Ramreddy Gari, Venu Alokam, Krishna K. Alapati
		5	TOTAL ACRES	

WHEREAS, this resolution shall bind the Owners and subsequent Owners of the Property; and

WHEREAS, the Franklin Municipal Planning Commission has reviewed and recommended the Plan of Services for the annexation area; and

WHEREAS, a public hearing was held following public notice as required by T.C.A. § 6-51-102, as amended; and

WHEREAS, it is believed it is in the best interest of the City to adopt a Plan of Services for the area petitioned to be annexed in order to provide for future development in accordance with City standards; and

WHEREAS, this resolution shall not bind the City to later annex the Property.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:

SECTION I. Pursuant to the provisions of T.C.A. §§ 6-51-102 and 6-51-104 (d) (4), as amended, there is hereby adopted, for the area bounded as described above, the following Plan of Services:

The Properties are located at 4436 Pratt Lane, as described herein and as depicted on the Map attached hereto as Exhibit A:

Map	Parcel	Acreage	Address	Owner
117	42.06	5	4436 Pratt Lane	Dinesh Reddy Ramreddy Gari, Venu Alokam, Krishna K. Alapati
		5	TOTAL ACRES	

A. Water

1. The Property is located within the Milcrofton service area.
2. Water availability shall be approved and provided through the City of Franklin prior to annexation.
3. The Owner shall be required to provide adequate fire flow and pressure to the Property.

B. Reclaimed Water

1. According to the City of Franklin's Municipal Code, reclaimed water systems shall be extended to a development if the development is located within 1,000 feet of an existing reclaimed water line.
2. In the case of this Property, an approximately 900-foot extension would be required to serve the Property. For this reason, reclaimed water will be required to be extended to the Property.

C. Wastewater

1. The Property lies within the Goose Creek Basin as defined in the City of Franklin Sanitary Sewer Basin Study.
2. The Owner shall be required to extend the sewer main approximately 1,600 linear feet to provide service to the Property.
3. The Owner shall be required to submit engineering calculations to determine final sizing requirements.
4. The Owner shall be required to provide Engineering design, construction, easements, rights-of-way and the costs associated with the on-site sanitary sewer infrastructure required to serve the development of this Property.
5. The Owner shall be responsible for the payment of fees per the policies and procedures outlined in Franklin Municipal Code.

D. Stormwater

1. The Owner shall be responsible for the engineering, design and construction of the necessary stormwater infrastructure for the development of the Property and shall comply with the requirements as outlined in the Franklin Municipal Code.
2. As the Property develops, the City will charge prevailing stormwater user fees per policies and procedures as outlined in the Franklin Municipal Code.

E. Streets

1. Emergency maintenance of streets will begin on the effective date of annexation.
2. Reconstruction and resurfacing of streets, routine maintenance, and installation of storm drainage will be accomplished under existing City policies.
3. Access to the Property shall be provided from Pratt Lane.
4. Unless waived by the Franklin Engineering Department, the Owner of the Property shall be required to submit a traffic impact study prior to submitting a development plan for review and approval. The exact scope associated with this traffic impact study shall be determined prior to submittal of the development plan. Required street improvements shall be determined as part of the plan. The roadways constructed as part of this development shall comply with City Street Standards.

F. Traffic Control

1. Traffic signals, traffic signs, street markings, and other traffic control devices shall be installed as the need is established by appropriate study and traffic standards. No needs have been identified for the area at this time.
2. New development after the effective date of annexation shall comply with City regulations governing traffic control devices and markings.

G. Street Lighting

1. No off-site street lighting is proposed at this time.
2. Street lighting within new developments shall be funded and installed by the Owner per City policy, which includes the installation of electric meters to allow for future ownership and maintenance by the City or homeowners association. The installation and operation of street lights shall coincide with the phasing of development and issuance of Certificates of Occupancy.

H. Street Name Signs

1. No additional street name signs in the area have been deemed necessary.
2. New development shall install street name signs per City policy.

I. Fire Protection

1. Fire protection by the present personnel and equipment of the Franklin Fire Department will be provided on and after the effective date of annexation.
2. No additional manpower or equipment will be necessary to serve the annexation area at this time.

J. Planning and Zoning

1. The planning and zoning jurisdiction of the City will extend to the annexed area on and after the effective date of annexation.
2. Upon annexation, the Property will be zoned by the Board of Mayor and Aldermen to a Zoning District and any applicable Overlay Zoning District(s), pursuant to the requirements of the Franklin Zoning Ordinance.

K. Parks and Recreation

1. The benefit and use of the recreational facilities and programs provided by the Parks Department will be available on and after the effective date of the annexation. Recreational facilities and programs will be provided with existing personnel, facilities and resources.

2. New development in the annexed area shall comply with the City of Franklin Parkland Impact Fees and Parkland Dedication Ordinance 2016-25. The Ordinance can be found at https://library.municode.com/tn/franklin/codes/code_of_ordinances
3. The Parks Master Plan is due to be updated 2023-24 to include new amendments that have been add over the past few years as we improve our processes. At this time Parks will look at the outer boundaries of the UGB for land and growth potential to build City Parks. Assured that Neighborhood Parks and Trails will need to be a part of future planning.

L. Police Protection

1. Police patrol and response to calls by the Franklin Police Department will be provided on and after the effective date of annexation.
2. Police services will be provided with existing personnel and equipment.

M. Building and Code Inspection Services

1. Building and code inspection services will begin in the annexed area on and after the effective date of the annexation.
2. New development in the annexed area shall comply with adopted City Building Codes, pay the applicable fees, and obtain the required permits for inspection services.

N. Garbage and Recycling Pickup and Environmental

1. The Sanitation and Environmental Services Department will begin providing services in the annexed area on and after the effective date of the annexation in accordance with adopted City requirements.
2. No additional manpower or equipment will be necessary to serve the annexation area at this time.

SECTION II. This Resolution shall be contingent upon the certification of the election for annexation and take effect 30 days after the certification of the election.

IT IS SO RESOLVED AND DONE on this ____ day of _____, 2023.

ATTEST:

_____

ERIC S. STUCKEY
City Administrator

CITY OF FRANKLIN, TENNESSEE:

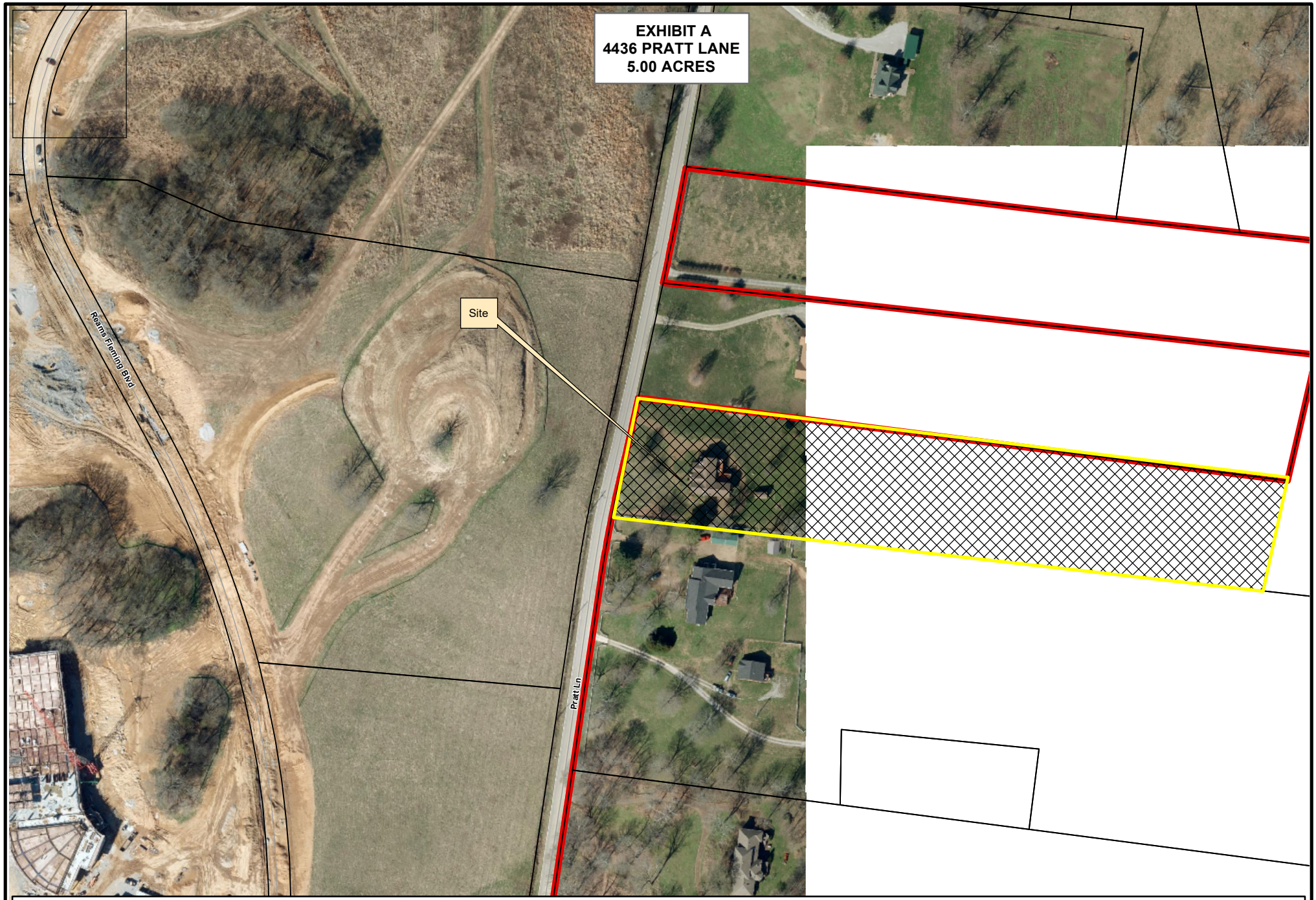
_____

DR. KEN MOORE
Mayor

Approved as to form by:

_____

Shauna R. Billingsley
City Attorney



Legend

4436 Pratt Lane

Limits

N

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Feet

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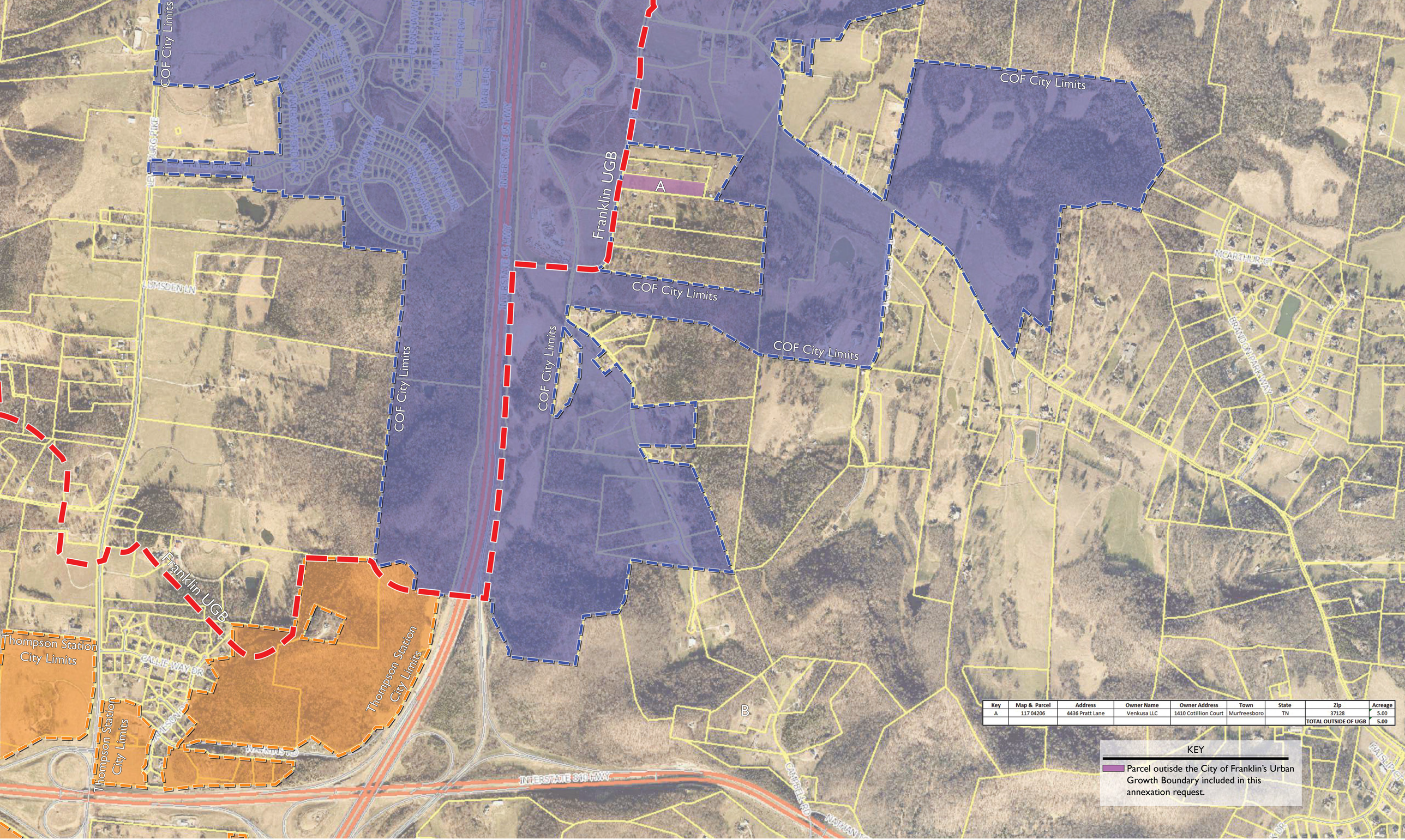


Key	Map & Parcel	Address	Owner Name	Owner Address	Town	State	Zip	Acreage
A	117 04206	4436 Pratt Lane	Venkusa LLC	1410 Cotillion Court	Murfreesboro	TN	37128	5.00
							TOTAL OUTSIDE OF UGB	5.00

KEY

Parcel outisde the City of Franklin's Urban Growth Boundary included in this annexation request.

N

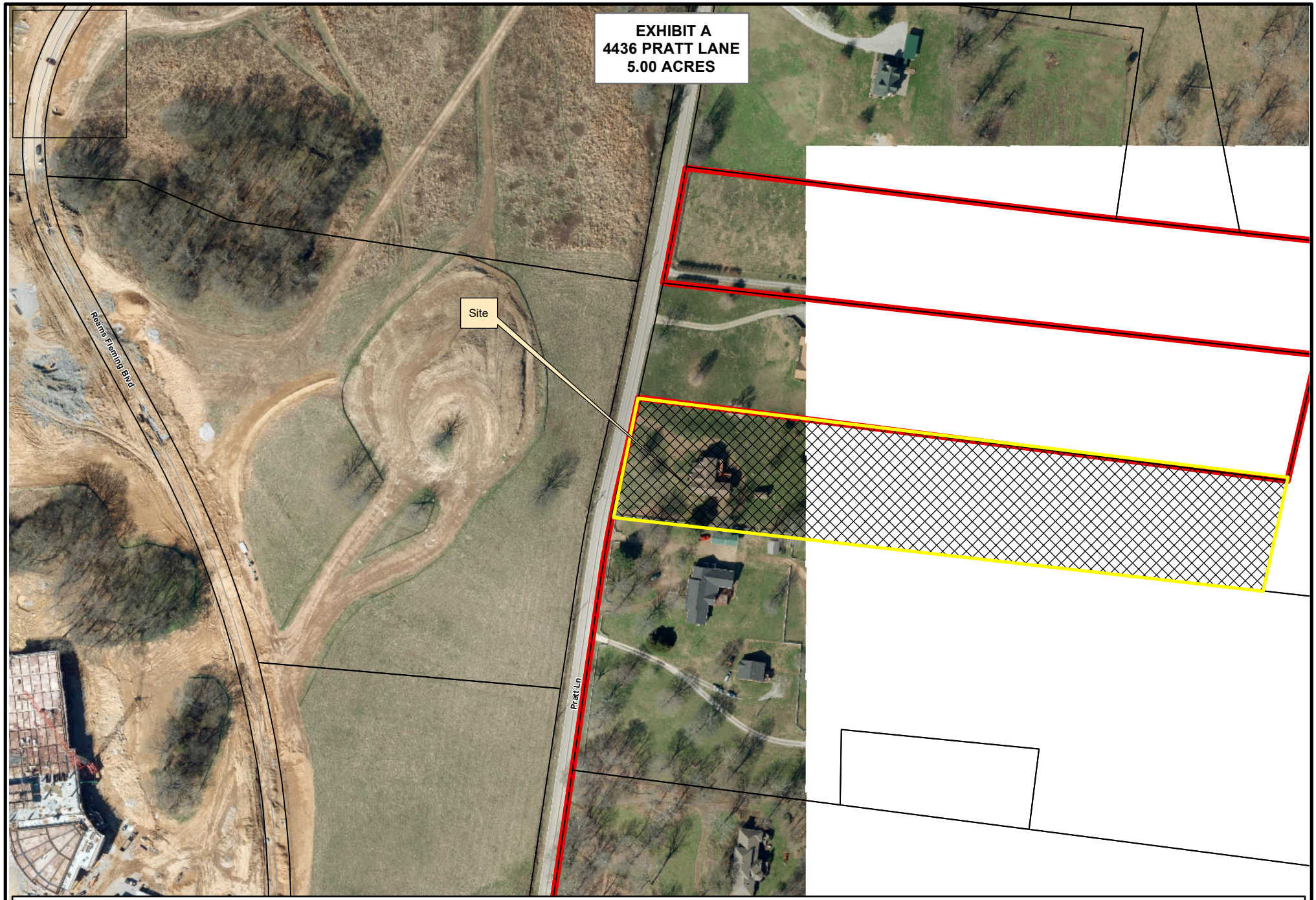
0 500 1000
GRAPHIC SCALE

WILLIAMSON COUNTY PARCEL

PARCEL REQUESTING ANNEXATION - COF Project # 8187

June 1, 2023

GAMBLE DESIGN COLLABORATIVE



Legend

4436 Pratt Lane

Limits

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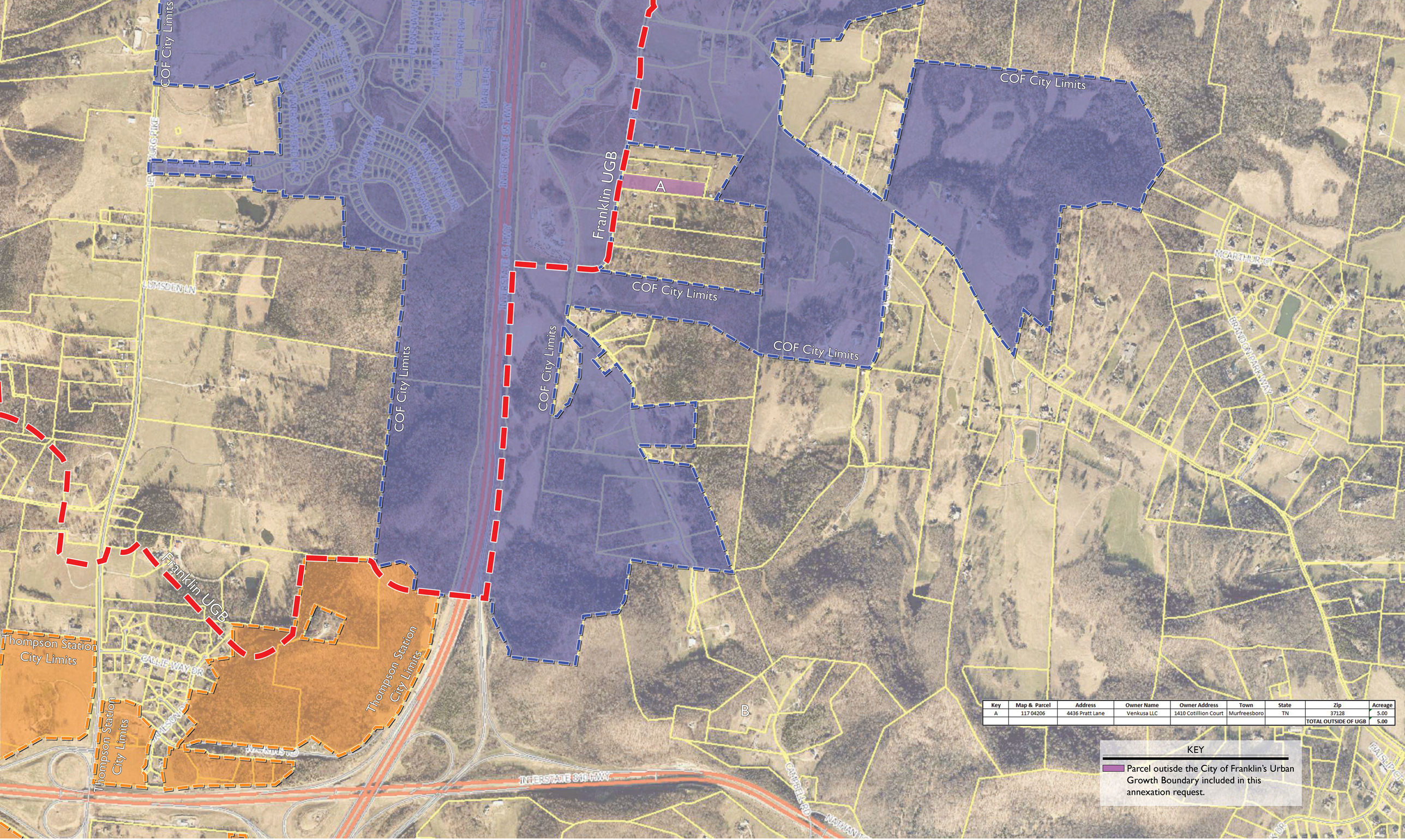


Key	Map & Parcel	Address	Owner Name	Owner Address	Town	State	Zip	Acreage
A	117 04206	4436 Pratt Lane	Venkusa LLC	1410 Cotillion Court	Murfreesboro	TN	37128	5.00
							TOTAL OUTSIDE OF UGB	5.00

KEY

Parcel outisde the City of Franklin's Urban Growth Boundary included in this annexation request.

N

0 500 1000
GRAPHIC SCALE

WILLIAMSON COUNTY PARCEL

PARCEL REQUESTING ANNEXATION - COF Project # 8187

June 1, 2023

GAMBLE DESIGN COLLABORATIVE

HISTORIC FRANKLIN TENNESSEE

City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-03273

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Amy Diaz-Barriga, Asst Director of Planning Development
Chelsea Randolph, Principal Planner

SUBJECT:

Consideration Of Resolution 2023-48, A Resolution Requesting A Referendum For The Annexation Of Property Located South Of The Intersection Of Peytonsville Road And Pratt Lane, And Outside Of The Southeastern Part Of The Franklin Urban Growth Boundary (UGB), By The City Of Franklin, Tennessee.

PURPOSE:

PROJECT INFORMATION
COF Project Number:8187
Applicant: Greg Gamble, Gamble Design Collaborative
Owner: Dinesh Reddt Ramreddy Gari, Radhika Kotagiri, Venu Alokam, and Krishna Alapati with Venkusa LLC

BACKGROUND/STAFF COMMENTS:
In May 2018, a BOMA Special Work Session was held to present and discuss annexation and growth priorities. Two drainage basins were identified as having short-term capability for annexation—the West Basin and the Goose Creek Basin. Additionally, the potential land uses that would be planned within the Goose Creek Basin would likely be a combination of commercial, office, and residential, due to the property's proximity to I-65 and major corridor extensions, such as Carothers Parkway. The BOMA adopted a resolution in March, 2021 to proceed with a study of land uses, infrastructure, and road network for the Goose Creek Basin.

The City has received an annexation request for a property in the Goose Creek Basin that is located outside of the UGB, located East of the Intersection Of Peytonsville Road and Pratt Lane (4436 Pratt Lane). A map of the property is attached. Annexation cannot occur until a referendum has been held, where a majority of the property owners requesting annexation vote to have their property annexed by the City of Franklin. This resolution authorizes the request to the Williamson County Election Commission to hold a referendum on October 24, 2023 in conjunction with the City Of Franklin Municipal Election. A full timeline of the annexation by referendum is attached as an exhibit with this request.

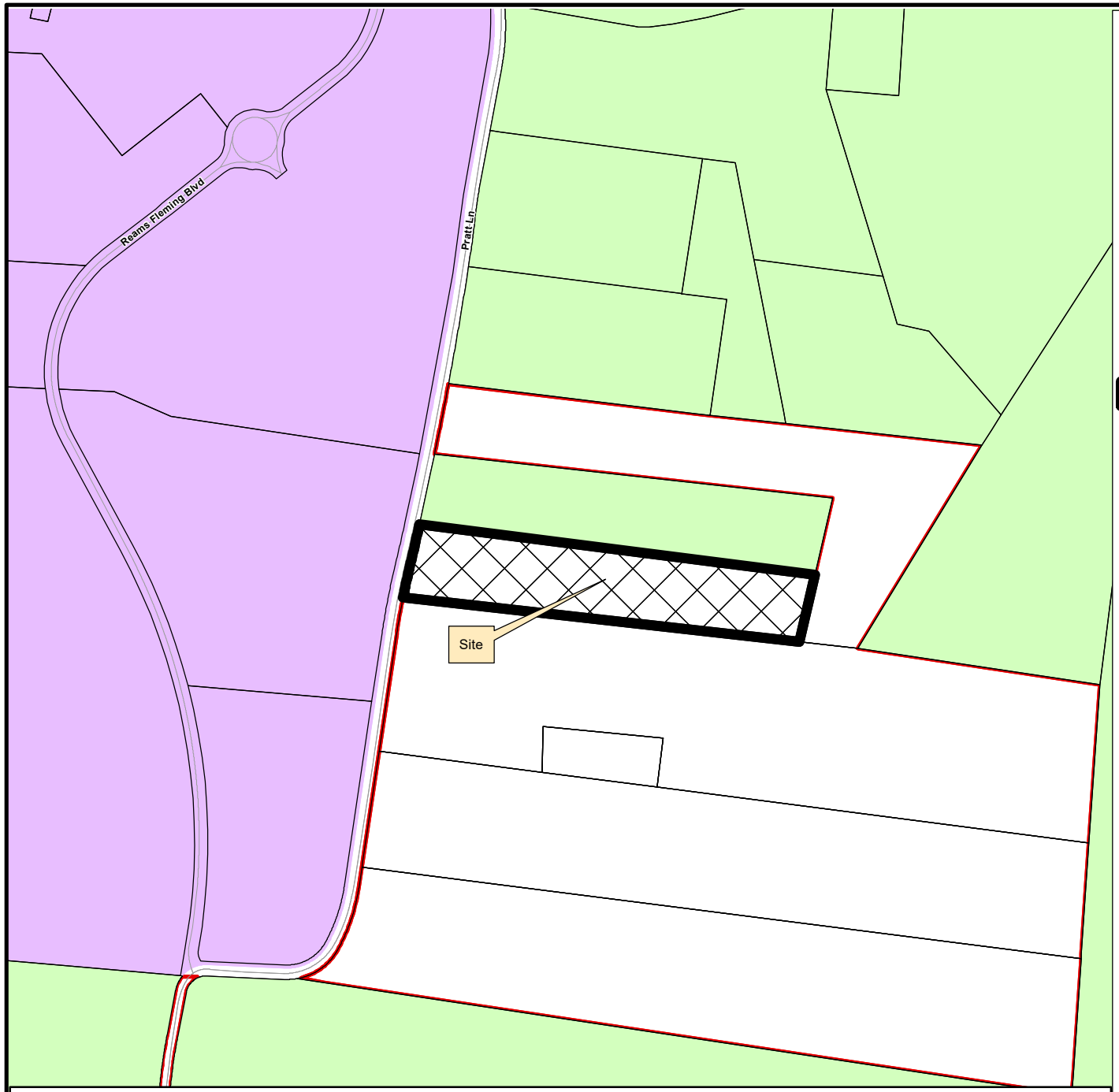
The subject property is within close proximity to other parcels that were annexed into the City Limits over the last several years, and partially fills in a "donut hole" created by past annexations.

FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff recommends that the Planning Commission recommend to the Board of Mayor and Aldermen to approve Resolution 2023-48.



4436 PRATT LANE
ANNEXATION, PLAN OF SERVICE, AND ZONING
ORDINANCE 2023-24
RESOLUTION 2023-49
RESOLUTION 2023-48

Project Information
Existing Land Use: Vacant
Proposed Land Use: Single-Family
Proposed Zoning: ER, Estate Residential
Site Acreage:5 acres

Legend

- Subject Property
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
- RC12 Regional Commerce 12 District
- GO General Office District
- LI Light Industrial District
- HI Heavy Industrial District

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Feet

HISTORIC FRANKLIN TENNESSEE

RESOLUTION 2023-48

A RESOLUTION REQUESTING A REFERENDUM FOR THE ANNEXATION OF PROPERTY LOCATED 4436 PRATT LANE, AND OUTSIDE OF THE SOUTHEASTERN PART OF THE FRANKLIN URBAN GROWTH BOUNDARY (UGB), BY THE CITY OF FRANKLIN, TENNESSEE

WHEREAS, *Tennessee Code Annotated* (T.C.A.) § 6-58-111 (c)(2) states as an alternative to a municipality annexing in a county's planned growth area or rural area by first amending the growth plan as described in subdivision (c)(1), a municipality may annex within a county's planned growth area or rural area, but the annexation must be by referendum only and not by ordinance, and the municipality must follow the referendum process as provided for in §§ 6-51-104 and 6-51-105; and

WHEREAS, T.C.A. § 6-51-104 (a) permits a municipality, when petitioned by interested persons, or upon its own initiative, by resolution for annexation by referendum; and

WHEREAS, T.C.A. § 6-51-105 (a) states at least thirty (30) days and not more than sixty (60) days after the last of such publications, the proposed annexation of territory shall be submitted by the county election commission in an election held on the request and at the expense of the proposing municipality, for approval or disapproval of the qualified voters who reside in the territory proposed for annexation; and

WHEREAS, T.C.A. § 6-51-105 (e) states if a majority of all the qualified voters voting thereon in the territory proposed to be annexed, or in the event of two (2) elections as provided for in subsections (a) and (b), a majority of the voters voting thereon in the territory to be annexed and a majority of the voters voting thereon in the municipality approve the resolution, annexation as provided therein shall become effective thirty (30) days after the certification of the election or elections; and

WHEREAS, the property owner, petitioned the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee (City), to annex 1 parcel, containing 5 acres, located outside of the Franklin Urban Growth Boundary (UGB); and

WHEREAS, the Properties are located south of the intersection of Peytonsville Road and Pratt Lane, as described herein and as depicted on the Map attached hereto as Exhibit A:

Map	Parcel	Acreage	Address	Owner
117	42.06	5	4436 Pratt Lane	Dinesh Reddy Ramreddy Gari, Venu Alokam, Krishna K. Alapati
		5	TOTAL ACRES	

WHEREAS, the referendum shall bind the Owners and subsequent Owners of the Property; and

WHEREAS, a Plan of Services for the area petitioned to be annexed will be adopted prior to the annexation becoming effective, in order to provide for future development in accordance with City standards, and the Board Of Mayor and Aldermen has, or will, approve the Plan of Services as part of Resolution 2023-49.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:

SECTION I. Pursuant to the provisions of T.C.A. §§ 6-51-104 and 6-51-105, as amended, the City of Franklin requests that a referendum for annexation be held for the following properties:

Map	Parcel	Acreage	Address	Owner
117	42.06	5	4436 Pratt Lane	Dinesh Reddy Ramreddy Gari, Venu Alokam, Krishna K. Alapati
		23.19	TOTAL ACRES	

SECTION II. The City of Franklin requests the referendum be held on October 24, 2023, in conjunction with the City Of Franklin Municipal Election".

SECTION III. The question to be submitted to the qualified voters who reside in the area proposed to be annexed shall be "FOR ANNEXATION" and "AGAINST ANNEXATION."

SECTION IV. This Resolution shall take effect from and after its adoption.

IT IS SO RESOLVED AND DONE on this ____ day of _____, 2023.

ATTEST:

_____

ERIC S. STUCKEY
City Administrator

CITY OF FRANKLIN, TENNESSEE:

_____

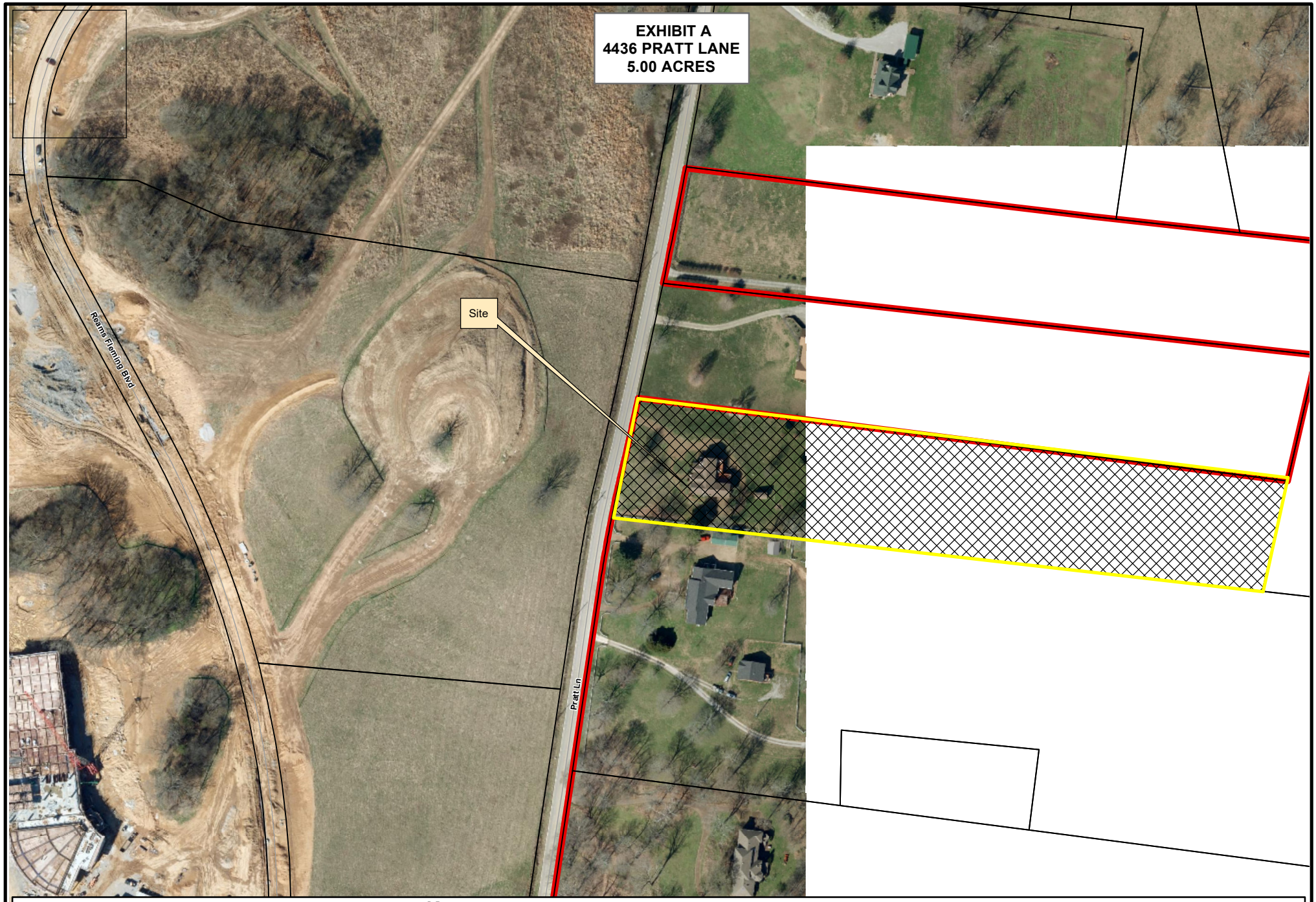
DR. KEN MOORE
Mayor

Approved as to form by:

_____

Shauna R. Billingsley
City Attorney

Law Dept approved 06.14.23



Legend

4436 Pratt Lane

Limits

N

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Feet

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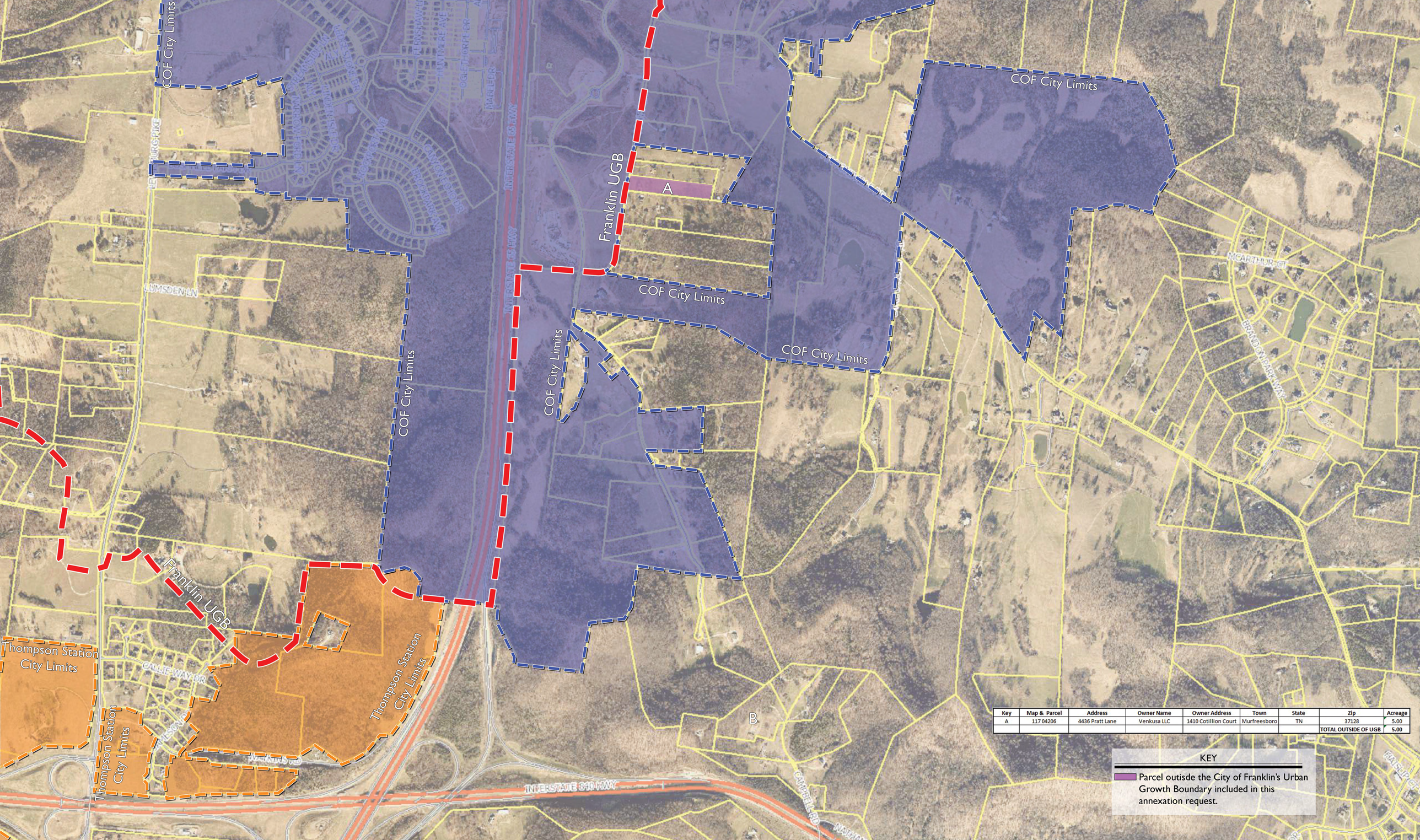


Key	Map & Parcel	Address	Owner Name	Owner Address	Town	State	Zip	Acreage
A	117 04206	4436 Pratt Lane	Venkusa LLC	1410 Cotillion Court	Murfreesboro	TN	37128	5.00
							TOTAL OUTSIDE OF UGB	5.00

KEY

Parcel outisde the City of Franklin's Urban Growth Boundary included in this annexation request.

N

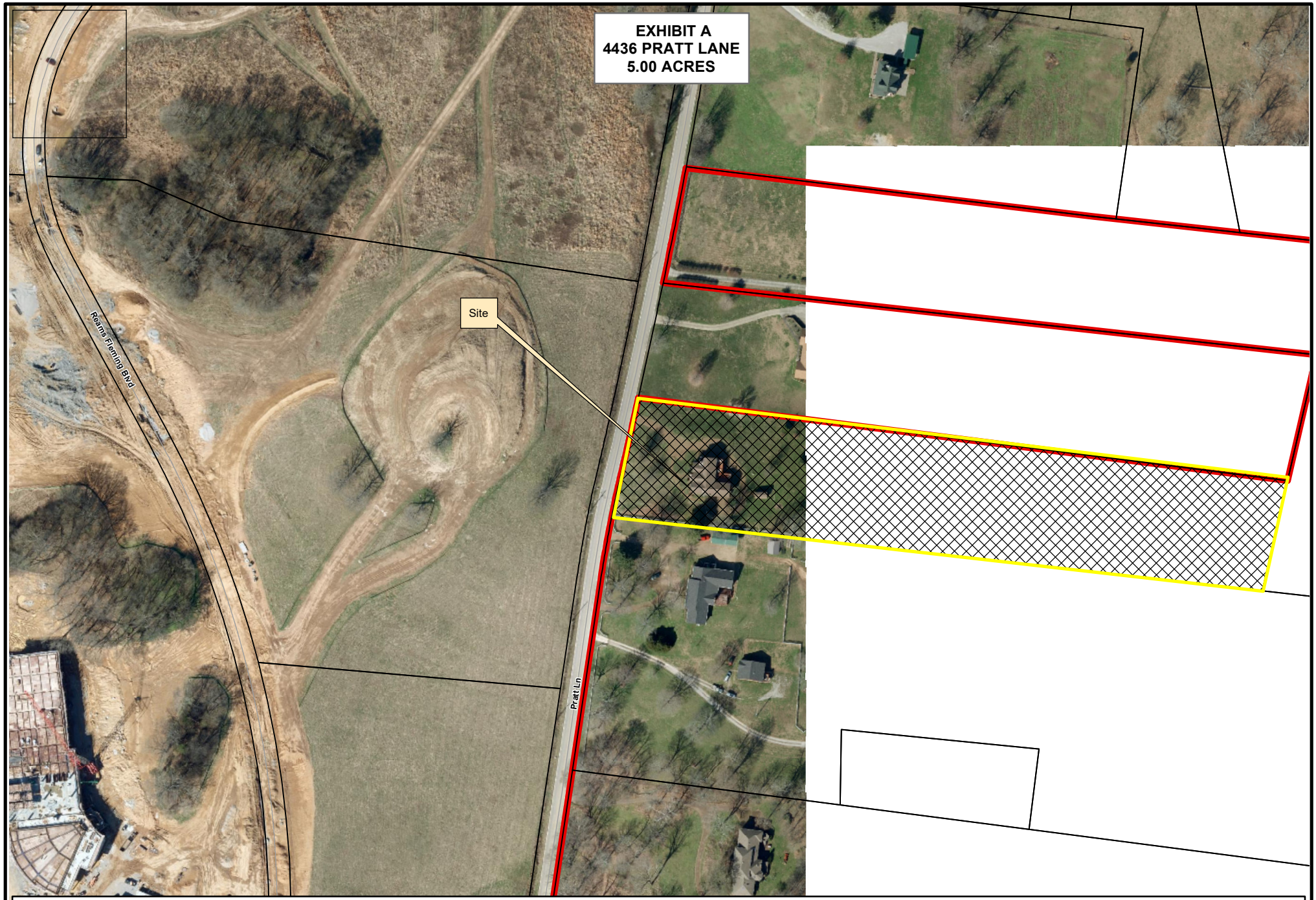
0 500 1000
GRAPHIC SCALE

WILLIAMSON COUNTY PARCEL

PARCEL REQUESTING ANNEXATION - COF Project # 8187

June 1, 2023

GAMBLE DESIGN COLLABORATIVE



Legend

4436 Pratt Lane

Limits

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Feet

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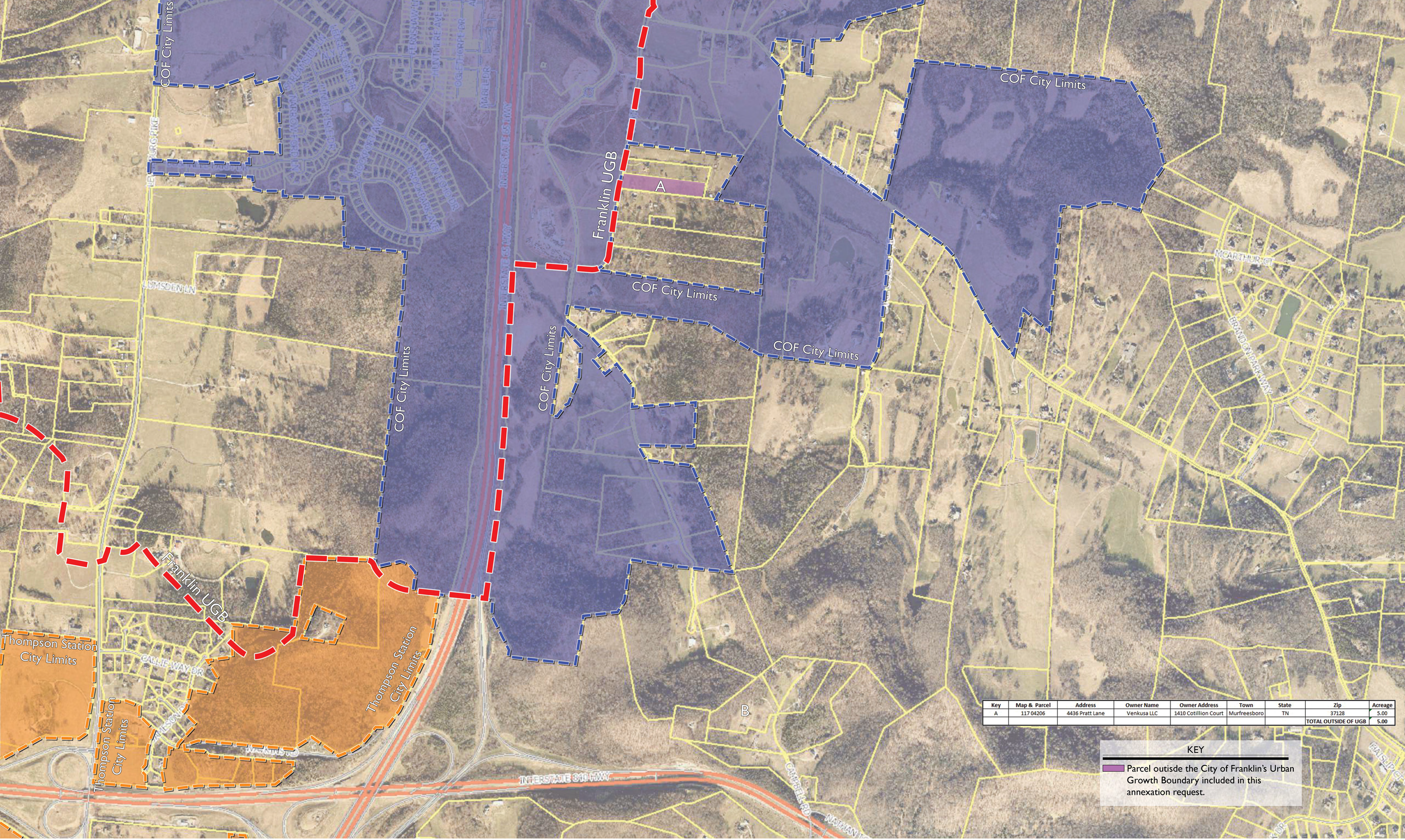


Key	Map & Parcel	Address	Owner Name	Owner Address	Town	State	Zip	Acreage
A	117 04206	4436 Pratt Lane	Venkusa LLC	1410 Cotillion Court	Murfreesboro	TN	37128	5.00
							TOTAL OUTSIDE OF UGB	5.00

KEY

Parcel outisde the City of Franklin's Urban Growth Boundary included in this annexation request.

N

0 500 1000
GRAPHIC SCALE

WILLIAMSON COUNTY PARCEL

PARCEL REQUESTING ANNEXATION - COF Project # 8187

June 1, 2023

GAMBLE DESIGN COLLABORATIVE

Annexation by Referendum Timeline (10/24/2023 ELECTION)		
No later than 2/6; must be in LAW's review queue by 2/14	Applicant completes application in IDT for Annexation initiation; provides owner affidavits and parcel descriptions of all properties included in request	1-2 months for staff to prepare RES Proposed Annexation by Referendum, DRAFT Plan of Services
	PROPERTY OWNERS CANNOT BE LLCS BUT BE INDIVIDUALS, IN ORDER TO VOTE IN THE REFERENDUM	
3/28/2023	Last available BOMA Worksession	Discussion to consider the Proposed Annexation by Referendum
4/25/2023	Last available BOMA Public Hearing	RES Proposed Annexation by Referendum and DRAFT Plan of Services
5/8/2023	Initial Submittal	Staff prepares RES Annexation by Referendum, RES Plan of Services, ORD Zone properties
June 22, 2023	FMPC	Recommendation to BOMA on annexation by referendum, POS, and Zoning
July 11, 2023 (can't be 7/25 because BOMA recess in July)	BOMA Worksession	Discussion to consider Annexation by Referendum, and associated Plan of Services and Zoning
Resolutions for Referendums only need a Worksession and Public Hearing		
August 8, 2023	BOMA regular meeting (1st Reading)	1st reading Zoning only
SEPTEMBER 12, 2023:	BOMA Public Hearing	RES Annexation by Referendum RES Plan of Services ORD Zone properties (2nd reading)
September 26, 2023	BOMA 3rd Reading	ORD Zone properties 3rd reading
October 24, 2023 Franklin Municipal Election	Election	(Annexation Law rules: 30 days prior = Sunday, September 24; 60 days prior = Friday, August 24)
TBD	Certification by the Election Commission	Annexation, Plan of Services and Zone properties become effective

HISTORIC FRANKLIN TENNESSEE

City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-03274

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Amy Diaz-Barriga, Asst Director of Planning Development
Chelsea Randolph, Principal Planner

SUBJECT:

Consideration Of Ordinance 2023-24, An Ordinance To Zone 5 Acres Estate Residential (ER) District, For The Property Located South Of The Intersection Of Peytonsville Road And Pratt Lane, At 4436 Pratt Lane.

PURPOSE:

PROJECT INFORMATION
COF Project Number:8187
Applicant: Greg Gamble, Gamble Design Collaborative
Owner: Dinesh Reddt Ramreddy Gari, Radhika Kotagiri, Venu Alokam, and Krishna Alapati with Venkusa LLC

BACKGROUND/STAFF COMMENTS:
The applicant is requesting to zone the property located South of the Intersection Of Peytonsville Road and Pratt Lane (4436 Pratt Lane) to Estate Residential (ER), should the Plan of Services, RES 2023-49, and Annexation, RES 2023-48, be approved by BOMA and the referendum for annexation pass. The planning and zoning jurisdiction of the City will extend to the annexed area on and after the effective date of annexation. Upon annexation, the Planning Commission will amend Envision Franklin to include these parcels into the document, including assigning Design Concepts for all parcels. The proposed zoning of Estate Residential (ER) is appropriate for the existing land use and is consistent with the zoning of the surrounding properties that were recently annexed into the City. No corresponding site plan or development plan for the property has been submitted at this time.

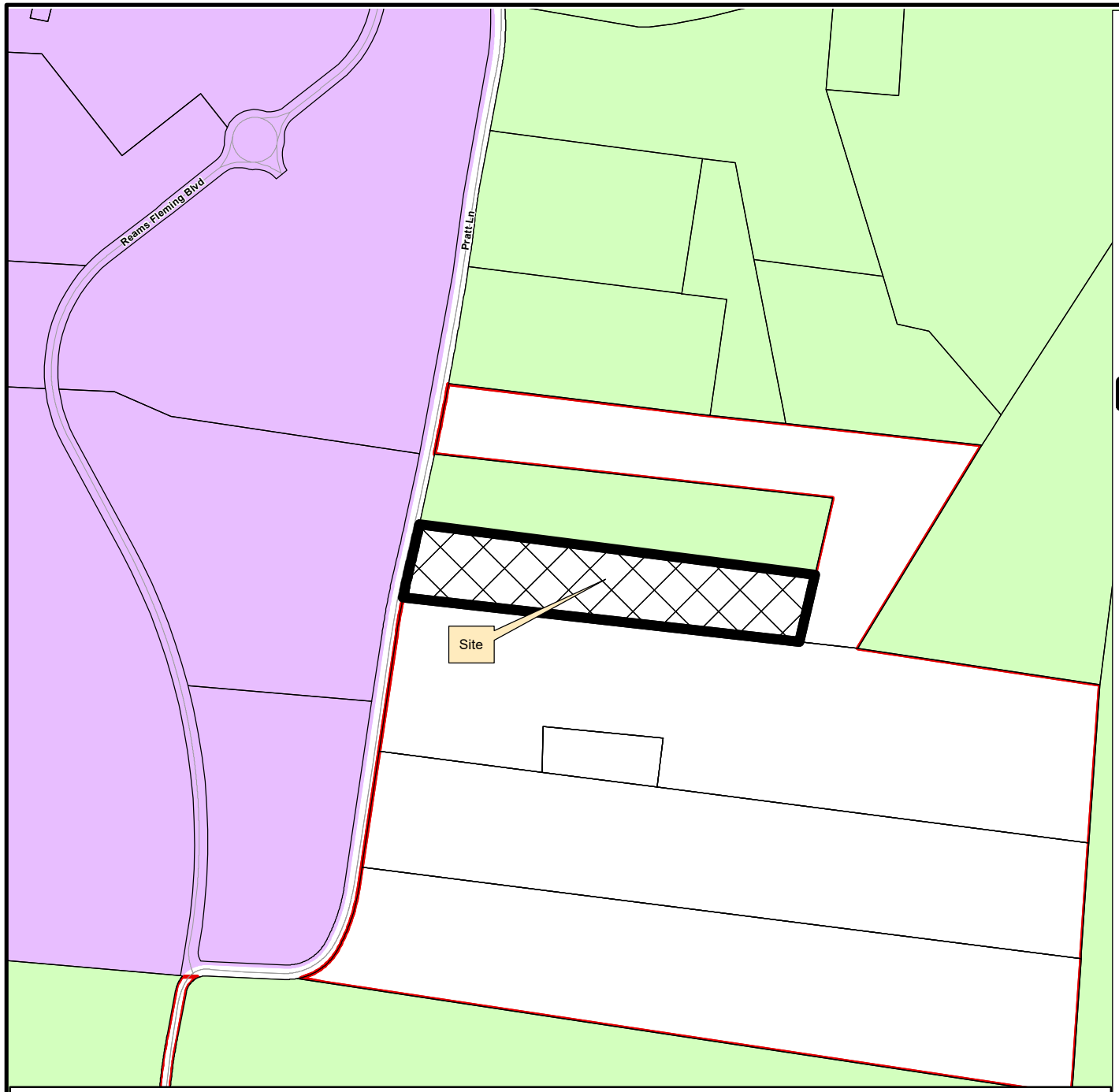
PROCEDURAL REQUIREMENTS:
1. The City's project identification number shall be included on all correspondence with any City department relative to this project.

FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff recommends that the Planning Commission recommend to the Board of Mayor and Aldermen to approve Ordinance 2023-24.



4436 PRATT LANE
ANNEXATION, PLAN OF SERVICE, AND ZONING
ORDINANCE 2023-24
RESOLUTION 2023-49
RESOLUTION 2023-48

Project Information
Existing Land Use: Vacant
Proposed Land Use: Single-Family
Proposed Zoning: ER, Estate Residential
Site Acreage:5 acres

Legend

- Subject Property
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
- RC12 Regional Commerce 12 District
- GO General Office District
- LI Light Industrial District
- HI Heavy Industrial District

This map was created by the Franklin Planning Department.
It was compiled from the most authentic information available.
The City is not responsible for any errors or omissions contained hereon.
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N

0 250 500 1,000
Feet

HISTORIC FRANKLIN TENNESSEE

ORDINANCE 2023-24

AN ORDINANCE TO ZONE 5 ACRES ESTATE RESIDENTIAL (ER) DISTRICT, FOR THE PROPERTY LOCATED SOUTH OF THE INTERSECTION OF PEYTONSVILLE ROAD AND PRATT LANE, AT 4436 PRATT LANE

WHEREAS, several property owners, listed below, of properties located south of 4436 Pratt Lane, petitioned the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee (City), to annex Property adjoining the City limits and located outside of the Franklin Urban Growth Boundary (UGB); and

WHEREAS, the BOMA has adopted a Plan of Services as described in Resolution 2023-49, and annexed the property through referendum held on October 24, 2023; and

WHEREAS, the City of Franklin, Tennessee, encourages responsible growth and the sensible transition of land uses and densities; and

WHEREAS, the Estate Residential (ER) district, provides zoning for land uses compatible with both the existing use of the property and the surrounding development; and

WHEREAS, the appropriate Overlay Districts will be assigned after the area can be studied by the Planning and Sustainability Department, and the land can be included in Envision Franklin; and

WHEREAS, the zoning has been reviewed and approved by BOMA after a public hearing and a recommendation by the Franklin Municipal Planning Commission (FMPC).

NOW THEREFORE BE IT ORDAINED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:

SECTION I. That the following described Property shall be, and is hereby, zoned Estate Residential (ER) District:

PREMISES CONSIDERED

Map	Parcel	Acreage	Address	Owner
117	42.06	5	4436 Pratt Lane	Dinesh Reddy Ramreddy Gari, Venu Alokam, Krishna K. Alapati
		5	TOTAL ACRES	

SECTION II: That the attached Location Map (Exhibit A) shall serve the purpose of further delimiting the geographical boundaries as described by this Ordinance.

SECTION III: The zoning shall be effective contingent on the certification of the election (referendum) and shall be effective 30 days after the certification of the election to coincide with the timing of the annexation.

SECTION IV. BE IT FINALLY ORDAINED by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that this Ordinance shall take effect from and after its passage on third and final reading, the health, safety, and welfare of the citizens requiring it.

IT IS SO RESOLVED AND DONE on this ____ day of _____, 2023.

ATTEST:

By: _____
Eric Stuckey
City Administrator

CITY OF FRANKLIN, TENNESSEE:

By: _____
Dr. Ken Moore
Mayor

Approved as to form by:

_____
Shauna R. Billingsley
City Attorney

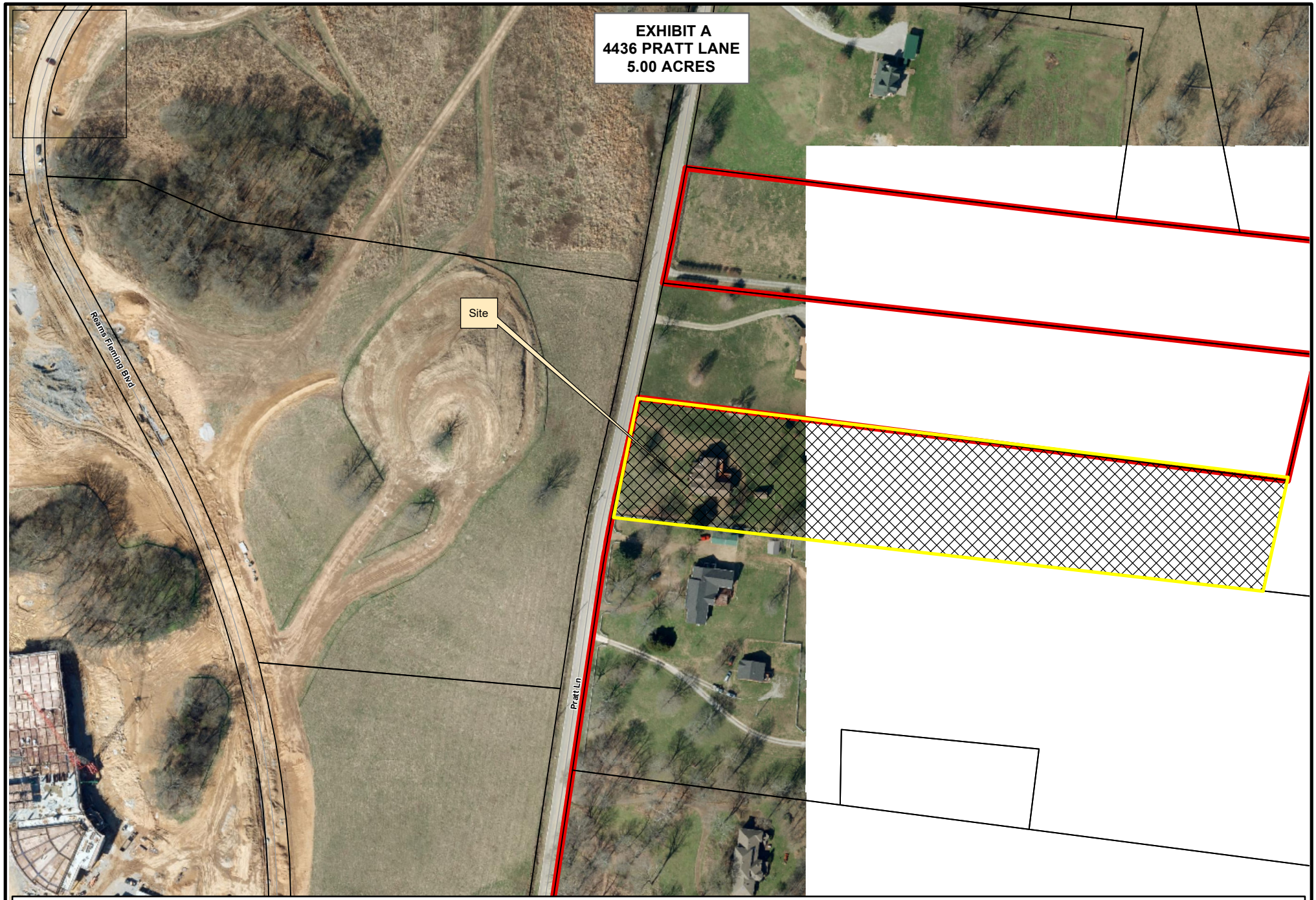
PLANNING COMMISSION RECOMMENDED: _____

PASSED FIRST READING: _____

PUBLIC HEARING HELD: _____

PASSED SECOND READING: _____

PASSED THIRD READING: _____



Legend

4436 Pratt Lane

Limits

N

0 250 500 1,000

Feet

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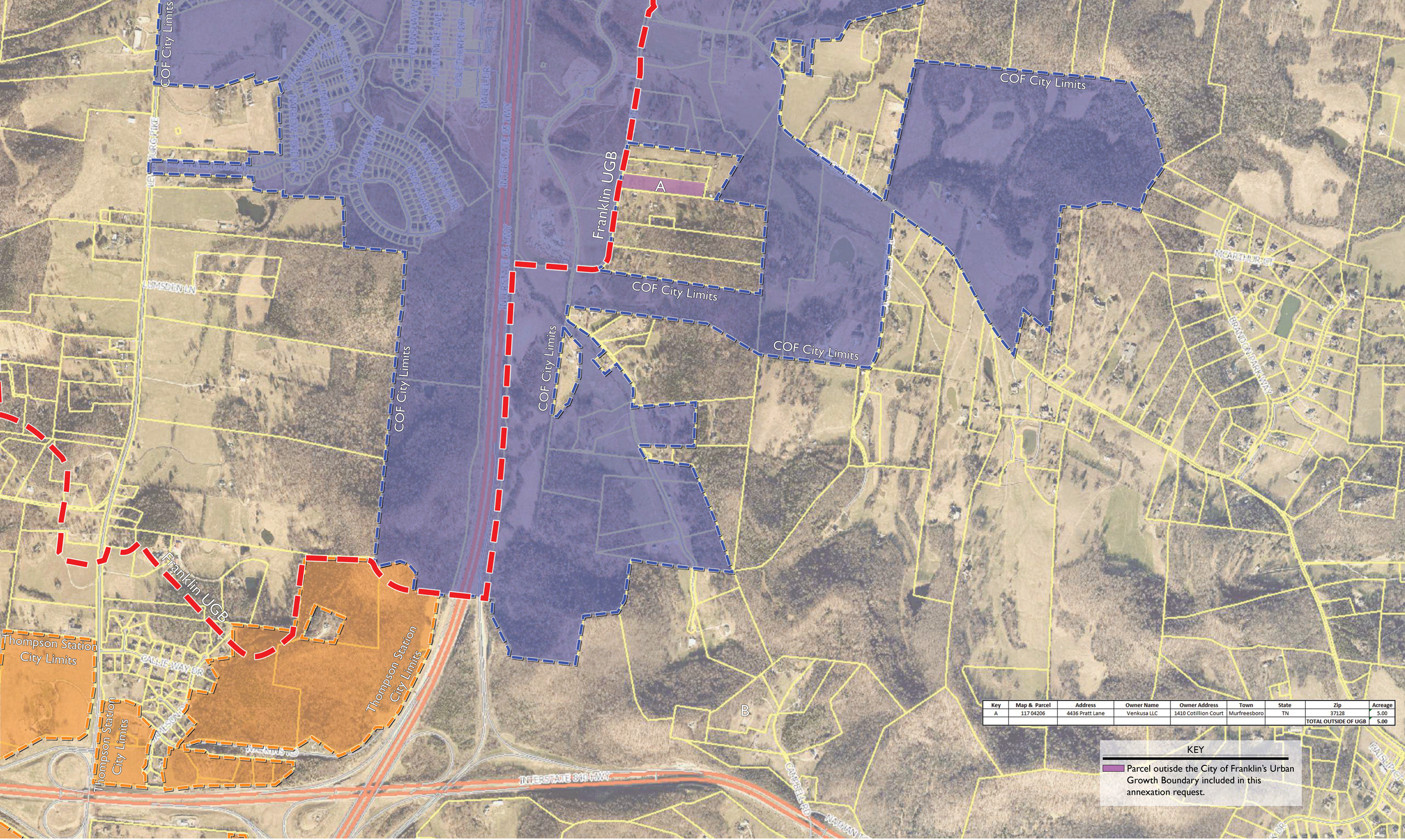


Key	Map & Parcel	Address	Owner Name	Owner Address	Town	State	Zip	Acreage
A	117 04206	4436 Pratt Lane	Venkusa LLC	1410 Cotillion Court	Murfreesboro	TN	37128	5.00
							TOTAL OUTSIDE OF UGB	5.00

KEY

Parcel outisde the City of Franklin's Urban Growth Boundary included in this annexation request.

N

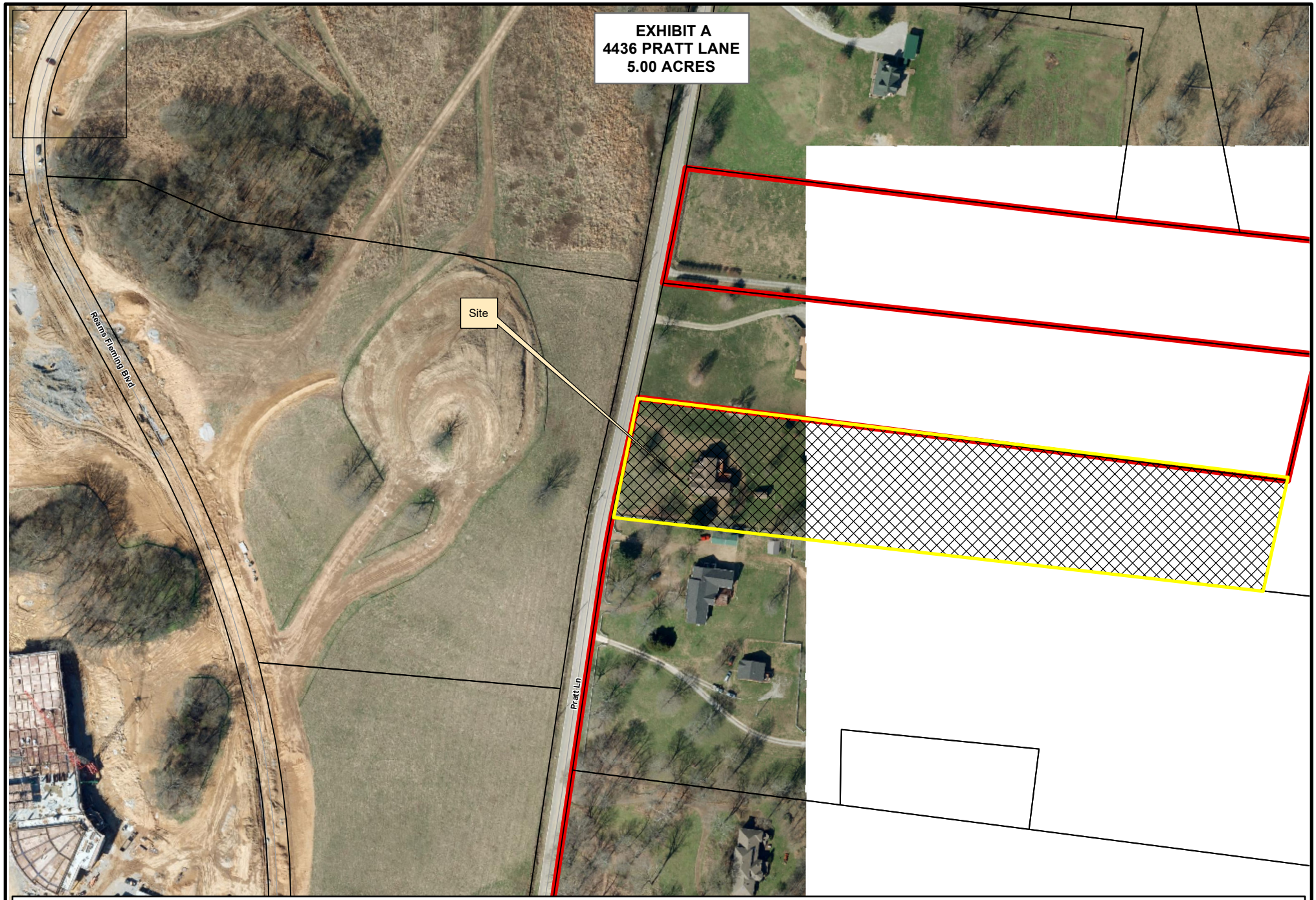
0 500 1000
GRAPHIC SCALE

WILLIAMSON COUNTY PARCEL

PARCEL REQUESTING ANNEXATION - COF Project # 8187

June 1, 2023

GAMBLE DESIGN COLLABORATIVE



Legend

4436 Pratt Lane

Limits

N

0 250 500 1,000

Feet

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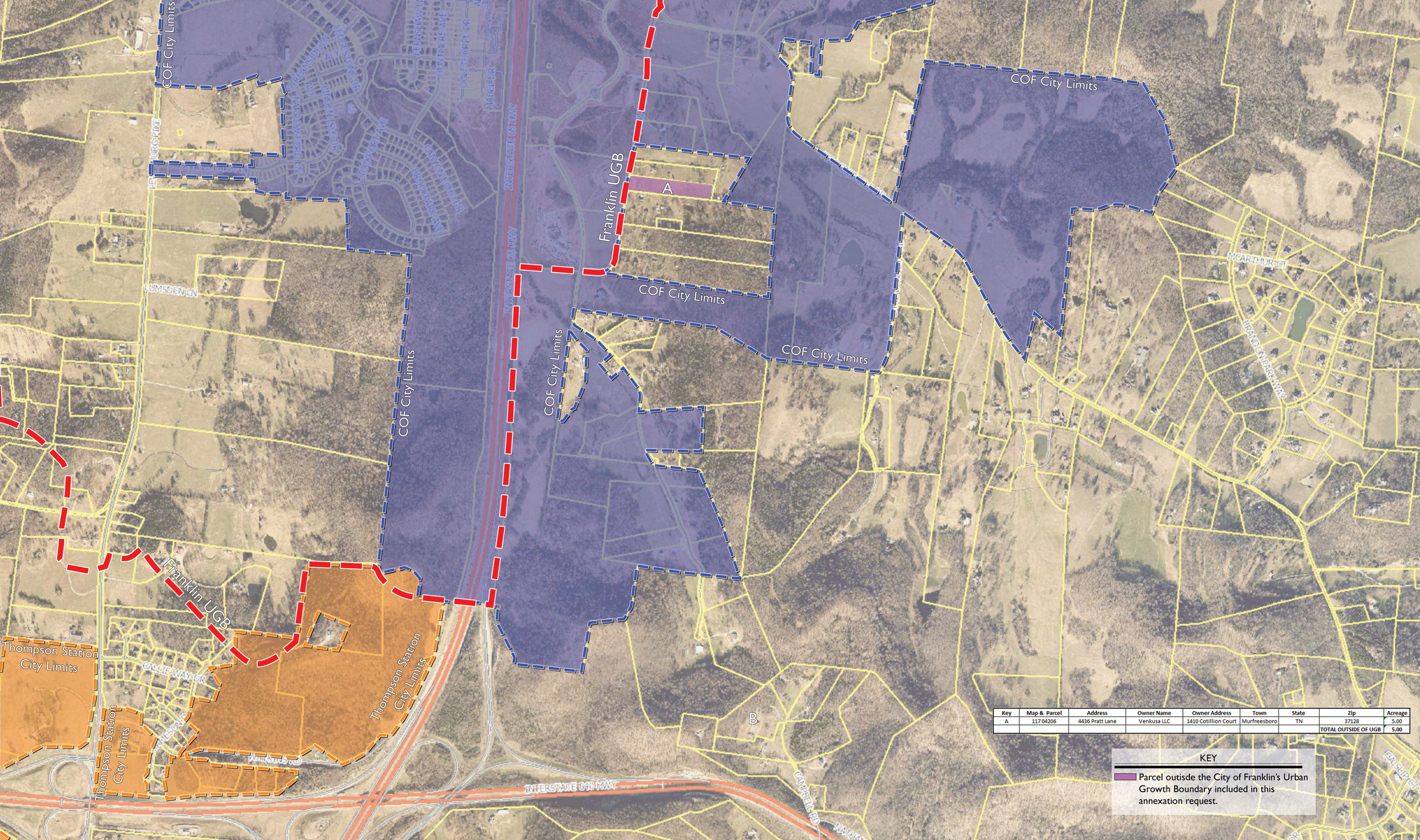

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KEY

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0 500 1000
GRAPHIC SCALE

WILLIAMSON COUNTY PARCEL

PARCEL REQUESTING ANNEXATION - COF Project # 8187

June 1, 2023

GAMBLE DESIGN COLLABORATIVE

HISTORIC FRANKLIN TENNESSEE

City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04661

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Amy Diaz-Barriga, Asst Director of Planning Development
Chelsea Randolph, Principal Planner

SUBJECT:

Consideration Of Ordinance 2023-22, An Ordinance To Rezone 2.906 Acres From Regional Commerce 6 (RC-6) District To Planned (PD 61.3/3,362) District For The Property Located East Of Mack Hatcher Memorial Parkway And North Of Cool Springs Boulevard. (101 Cool Springs Boulevard PUD Subdivision)
FMPC 5/25, Deferred 6-0

PURPOSE:

PROJECT INFORMATION
COF Project Number: 8158
Applicant: Greg Gamble, Gamble Design Collaborative
Owner: Mitchell Rechler, CSLP GP

BACKGROUND/STAFF COMMENTS:
UPDATE
The applicant requested deferral at the May 25, 2023 FMPC meeting for consideration at the June 22, 2023 FMPC, and the rezoning request/submittal package has not changed.

PREVIOUS STAFF REPORT
The applicant is requesting to rezone the property from Regional Commerce 6 (RC-6) District to Planned District (PD 61.3/3,362) to accommodate the proposed development plan for 101 Cool Springs Boulevard. The development plan has been submitted concurrently. Envision Franklin places this property in the Regional Commerce Design Concept.

The proposed development meets the minimum recommendations of Envision Franklin by providing a mix of uses that include commercial and multi-family residential, although the amount of activated ground-floor commercial use is very minimal, like approved developments nearby. The site layout provides an urban feel with building-lined streets creating a walkable development and provides architecture that fits in with the style of the corridor. The Regional Commerce Design Concept supports a mix of uses and the uses proposed are supported within the design concept.

With that said, a better mixture of uses, as allowed within the existing RC6 zoning district, could help

facilitate an improvement in projected traffic flow by dispersing traffic onto Cool Springs Boulevard at different peak times of day. While the proportion of multi-family to commercial space is consistent with approved projects adjacent to this property, the transportation infrastructure does not support the proposed mixture of uses, which is predominantly multifamily residential with peak traffic volumes projected at similar times of day. Envision Franklin directs growth in areas where existing or planned infrastructure can support the proposed uses, and the uses proposed with this development plan place so much strain on the existing transportation infrastructure that minimum traffic requirements cannot be met. (See below for more detailed information.)

The 101 Cool Springs Development has submitted their final version of the Traffic Impact Analysis (TIA), in accordance with City of Franklin TIA guidelines. There were study intersections that did not meet our overall Level of Service D and individual movements that had delay worse than Level of Service E, thus, there are intersections and movements that did not meet City standards. Mitigation was not recommended for the Cool Springs at McEwen intersection, which is showing the greatest amount of excessive delay in this study. This intersection fails to an overall Level of Service F with this development. The added vehicular trips of this and adjacent developments in this area further increase traffic along Cool Springs Boulevard, and this area in general.

The intersection of Cool Springs Boulevard @ Mallory Lane and Mallory Lane @ McEwen were outside the study area. Any development in this area increases traffic at these intersections, as discussed during the Optima development, adding to existing excessive vehicle delays. It should be noted that the current TIA guidelines are being discussed with the Board, and the TIA requirements are anticipated to be adjusted as a result of these discussions. It is unknown at this time if those adjustments would bring the affected intersections of this development into meeting the future TIA standards.

PROCEDURAL REQUIREMENTS:

1. The City's project identification number shall be included on all correspondence with any City department relative to this project.

FINANCIAL IMPACT:

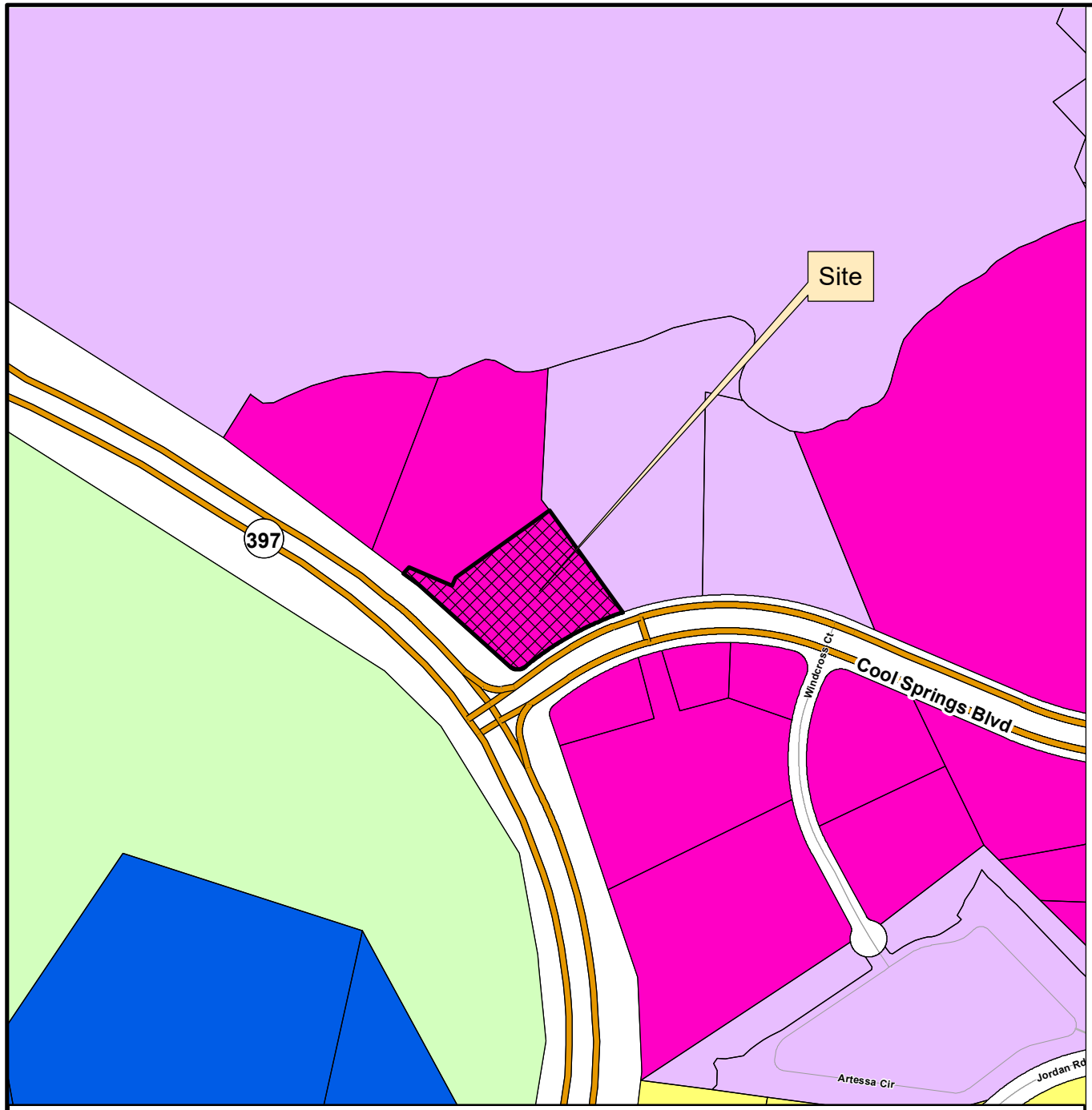
Unknown.

RECOMMENDATION:

Staff recommends that the Planning Commission recommend to the Board of Mayor and Aldermen to disapprove Ordinance 2023-22.

101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
ORDINANCE 2023-22
RESOLUTION 2023-42

Project Information
Existing Zoning: R-6 Residential 6 District
Proposed Zoning: PD Planned District
Overlay Districts: 500 ft Buffer of Hillside Overlay
Site Acreage: 2.906 acres
Proposed Number of Dwelling Units: 178
Proposed Nonresidential Square Footage: 3,400 SF



Legend

- 101 Cool Springs Boulevard
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
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- LI Light Industrial District
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N

0 250 500 1,000
Feet

HISTORIC FRANKLIN TENNESSEE

ORDINANCE 2023-22

AN ORDINANCE TO REZONE 2.906 ACRES FROM REGIONAL COMMERCE 6 (RC-6) DISTRICT TO PLANNED (PD 61.3, 3,362) DISTRICT FOR THE PROPERTY LOCATED EAST OF MACK HATCHER MEMORIAL PARKWAY AND NORTH OF COOL SPRINGS BOULEVARD. (101 COOL SPRINGS BOULEVARD PUD SUBDIVISION).

WHEREAS, the City of Franklin, Tennessee, encourages responsible growth and the sensible transition of land uses and densities; and

WHEREAS, the Planned (PD 61.3/3,362) District provides zoning for land uses compatible with both the Franklin Land Use Plan and surrounding development; and

WHEREAS, the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee, adopted Resolution 2023-42, approving a Planned Unit Development (PUD) Development Plan as required by the Franklin Zoning Ordinance; and

WHEREAS, the zoning has been reviewed and approved by BOMA after a public hearing and a recommendation by the Franklin Municipal Planning Commission.

NOW THEREFORE BE IT ORDAINED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:

SECTION I. That the following described property shall be, and is hereby, rezoned from its present zoning classification of **Regional Commerce 6 (RC-6)** District to **Planned (61.3/3,362)** District:

PREMISES CONSIDERED

Map-Parcel	Acres
062--04510	2.906
Total	2.906

SECTION II. That the attached Location Map and Survey shall serve the purpose of further delimiting the geographical boundaries as described by this Ordinance.

SECTION III. BE IT FINALLY ORDAINED by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that this Ordinance shall take effect from and after its passage on third and final reading, the health, safety, and welfare of the citizens requiring it.

IT IS SO RESOLVED AND DONE on this _____ day of _____, 2023.

ATTEST:

By: _____
Eric Stuckey
City Administrator

CITY OF FRANKLIN, TENNESSEE:

By: _____
Dr. Ken Moore
Mayor

Law Dept. Approved 05.17.23

Approved as to Form By:

_____

Shauna R. Billingsley
City Attorney

PLANNING COMMISSION RECOMMENDED: _____

PASSED FIRST READING: _____

PUBLIC HEARING HELD: _____

PASSED SECOND READING: _____

PASSED THIRD READING: _____

101 COOL SPRINGS BOULEVARD

PUD SUBDIVISION, REZONING

PLANNED DISTRICT
FRANKLIN, WILLIAMSON, TENNESSEE

VICINITY MAP
NTS

OWNER:
CSLP GP
85 SOUTH SERVICE RD
PLAINVIEW, NY 10803
MITCHELL RECHLER
631-414-8484
mr@mrechler.com

APPLICANT:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

ENGINEER:
KIMLEY-HORN
10 LEA AVE, SUITE 400
NASHVILLE, TN 37204
RYAN MCMASTER, PE
615-564-2876
ryan.mcmaster@kimley-horn.com

ARCHITECT:
906 STUIDO ARCHITECTS
143 FIFTH AVE SOUTH
FRANKLIN, TN 37064
MEREDITH BUCHER, AIA
615-721-6024
meredith.bucher@906studio.com

VESTING DEVELOPMENT STANDARDS:

DEVELOPMENT STANDARD	VERSION/DATE
ZONING ORDINANCE	1.1.2023
SUBDIVISION REGULATIONS	1.1.2022
HISTORIC DISTRICT DESIGN GUIDELINES	5.30.2022
TRANSPORTATION & STREET TECH. STANDARDS	7.1.2022
STORMWATER BMP MANUAL	2021
TECHNICAL SPECIFICATIONS FOR UTILITY	10.13.2020
MUNICIPAL CODE	9.27.2022

SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION, REZONING
COF PROJECT #:	8158
MAP:	MAP #94062G
PARCEL #:	062—04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN CONCEPT:	REGIONAL COMMERCE
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS: 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE VA OVER PODIUM TYPE 1A
MAXIMUM BUILDING HEIGHT:	70' - 0" PER 2018 IBC
PROPOSED MAX. BUILDING HEIGHT:	68' - 6" (SEE ARCH PLANS)
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
APARTMENT PARKING REQUIRED:	311 SPACES 1.5 SPACES PER 1 BEDROOM (134 UNITS) 2.5 SPACES PER 2 BEDROOM (44 UNITS)
COMMERCIAL PARKING REQUIRED	11 SPACES 3.33 SPACES PER 1000 SF (3,362 SF)
TOTAL PARKING REQUIRED:	322 SPACES
TOTAL SHARED PARKING REQUIRED:	297 SPACES (25 SPACE REDUCTION) (SEE SHARED PARKING STUDY)
EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:
1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
2. THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE CITY OF FRANKLIN STANDARDS AND THE APPROVAL OF PLANNING COMMISSION. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY EITHER RELEVANT DEPARTMENT SUPERINTENDENT OR THE PLANNING COMMISSION.
3. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FLIPZONE 4100 AND NAD 83 DATUM.
4. BASE INFORMATION HAS BEEN TAKEN FROM TWO ALTA SURVEYS PROVIDED BY CEC INC, PERFORMED BY MICHAEL K. STORY DATED 02-23-22 AND 9-14-22. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

SHEET INDEX

C0.0 COVER SHEET
C1.0 OVERALL EXISTING CONDITIONS

GREGORY C. GAMBLE
REGISTERED
5423
LANDSCAPE ARCHITECT

INITIAL SUBMITTAL: APRIL 10, 2023
RESUBMITTAL: MAY 4, 2023

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
COF PROJECT #:	8158
MAP:	MAP #94062G
PARCEL #:	062--04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN STANDARD:	REGIONAL COMMERCE
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
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NOTES:
1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
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3. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FLIPZONE 4100 AND NAD 83 DATUM.
4. BASE INFORMATION HAS BEEN TAKEN FROM TWO ALTA SURVEYS PROVIDED BY CEC INC, PERFORMED BY MICHAEL K. STORY DATED 02-23-22 AND 9-14-22. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

SURVEY NOTES

1. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLAN COORDINATE SYSTEM, AND NAD 83 DATUM.
2. BASE INFORMATION WAS TAKEN FROM AN ALTA SURVEY PREPARED BY CIVIL A& ENVIRONMENTAL CONSULTANTS, INC., DATED 02-23-2022. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
3. INFORMATION WAS ALSO TAKEN FROM THE CITY OF FRANKLIN GIS AND AERIAL PHOTOGRAPHS.
4. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARRY OTHER THAN THE OWNER.
5. THIS PROJECT IS NOT LOCATED IN A FLOOD HAZARD AREA ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP 47187C0204F, DATED SEPTEMBER 29, 2006, ZONE "X".

SITE SLOPE TABLE

	14% - 19.99%
	20% and above

EXISTING DETENTION POND NOTE

PER ASPEN GROVE MEDICAL OFFICE BUILDING PLANS, THE EXISTING DETENTION POND HAS BEEN DESIGNED AND CONSTRUCTED TO SERVE THE 101 COOL SPRINGS DEVELOPMENT.
DESIGNED STORAGE CAPACITY:≈/- 31,000 CF
EXISTING POND PER SURVEY COMPLETED BY CEC DATED 9/14/2022:
AS-BUILT STAGE STORAGE CAPACITY: +/- 31,441 CF

GRAPHIC SCALE IN FEET
0 25 50 100

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
FRANKLIN, TENNESSEE

RYAN McMASTER REGISTERED ENGINEER NO. 109002 STATE OF TENNESSEE
2023-05-04

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO. 118479000	

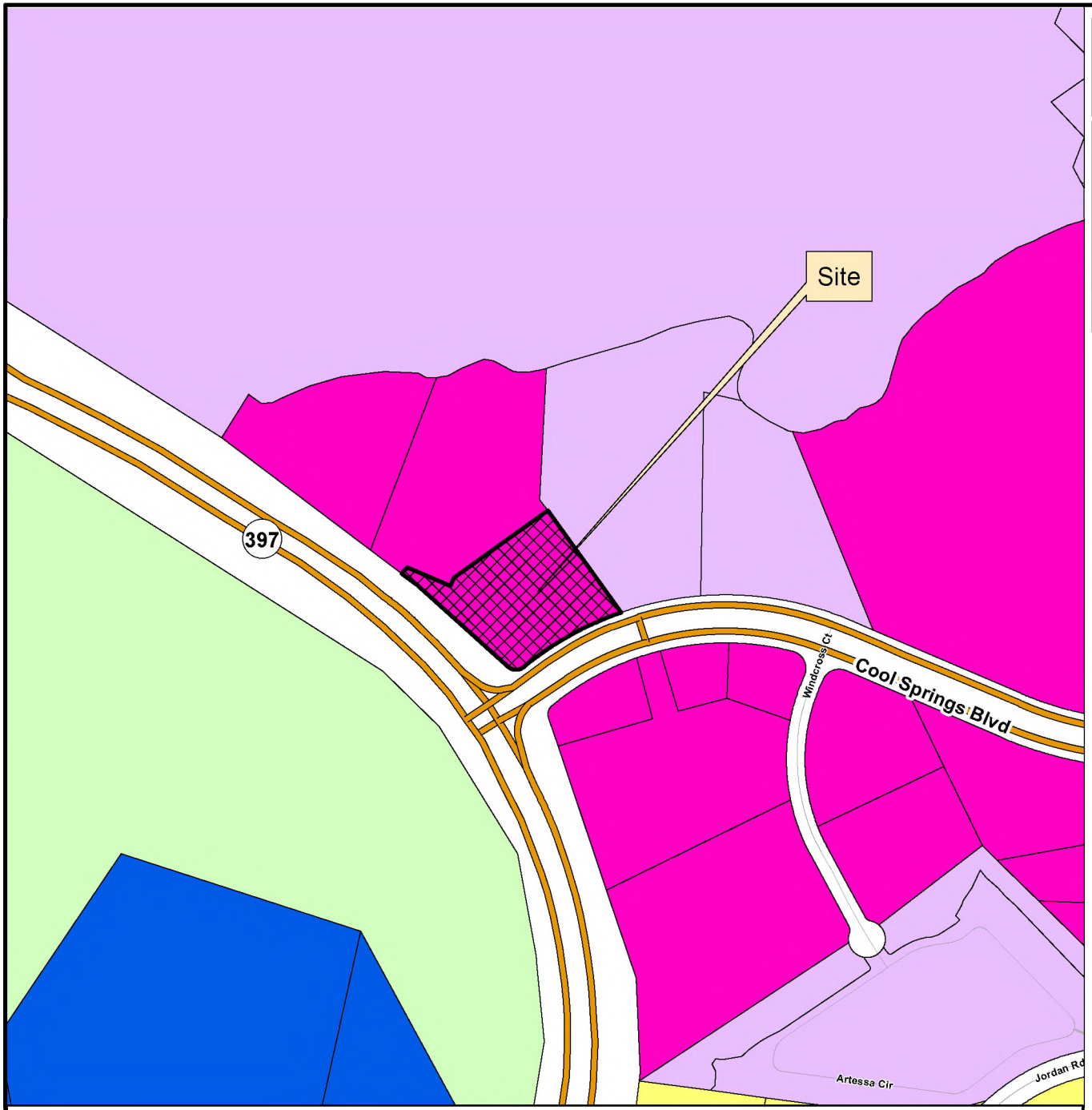
OVERALL EXISTING CONDITIONS

SHEET NUMBER
C1.0

COF #8158

101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
ORDINANCE 2023-22
RESOLUTION 2023-42

Project Information
Existing Zoning: R-6 Residential 6 District
Proposed Zoning: PD Planned District
Overlay Districts: 500 ft Buffer of Hillside Overlay
Site Acreage: 2.906 acres
Proposed Number of Dwelling Units: 178
Proposed Nonresidential Square Footage: 3,400 SF



Legend

- 101 Cool Springs Boulevard
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
- RC12 Regional Commerce 12 District
- GO General Office District
- LI Light Industrial District
- HI Heavy Industrial District

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HISTORIC FRANKLIN TENNESSEE

101 COOL SPRINGS BOULEVARD

PUD SUBDIVISION, REZONING

PLANNED DISTRICT
FRANKLIN, WILLIAMSON, TENNESSEE

VICINITY MAP
NTS

OWNER:
CSLP GP
85 SOUTH SERVICE RD
PLAINVIEW, NY 10803
MITCHELL RECHLER
631-414-8484
mr@mrechler.com

APPLICANT:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

ENGINEER:
KIMLEY-HORN
10 LEA AVE, SUITE 400
NASHVILLE, TN 37204
RYAN MCMASTER, PE
615-564-2876
ryan.mcmaster@kimley-horn.com

ARCHITECT:
906 STUIDO ARCHITECTS
143 FIFTH AVE SOUTH
FRANKLIN, TN 37064
MEREDITH BUCHER, AIA
615-721-6024
meredith.bucher@906studio.com

VESTING DEVELOPMENT STANDARDS:

DEVELOPMENT STANDARD	VERSION/DATE
ZONING ORDINANCE	1.1.2023
SUBDIVISION REGULATIONS	1.1.2022
HISTORIC DISTRICT DESIGN GUIDELINES	5.30.2022
TRANSPORTATION & STREET TECH. STANDARDS	7.1.2022
STORMWATER BMP MANUAL	2021
TECHNICAL SPECIFICATIONS FOR UTILITY	10.13.2020
MUNICIPAL CODE	9.27.2022

SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION, REZONING
COF PROJECT #:	8158
MAP:	MAP #94062G
PARCEL #:	062—04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN CONCEPT:	REGIONAL COMMERCE
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS: 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE VA OVER PODIUM TYPE 1A
MAXIMUM BUILDING HEIGHT:	70' - 0" PER 2018 IBC
PROPOSED MAX. BUILDING HEIGHT:	68' - 6" (SEE ARCH PLANS)
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
APARTMENT PARKING REQUIRED:	311 SPACES 1.5 SPACES PER 1 BEDROOM (134 UNITS) 2.5 SPACES PER 2 BEDROOM (44 UNITS)
COMMERCIAL PARKING REQUIRED	11 SPACES 3.33 SPACES PER 1000 SF (3,362 SF)
TOTAL PARKING REQUIRED:	322 SPACES
TOTAL SHARED PARKING REQUIRED:	297 SPACES (25 SPACE REDUCTION) (SEE SHARED PARKING STUDY)
EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:
1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
2. THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE CITY OF FRANKLIN STANDARDS AND THE APPROVAL OF PLANNING COMMISSION. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY EITHER RELEVANT DEPARTMENT SUPERINTENDENT OR THE PLANNING COMMISSION.
3. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FLIPZONE 4100 AND NAD 83 DATUM.
4. BASE INFORMATION HAS BEEN TAKEN FROM TWO ALTA SURVEYS PROVIDED BY CEC INC, PERFORMED BY MICHAEL K. STORY DATED 02-23-22 AND 9-14-22. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
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6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

SHEET INDEX

C0.0 COVER SHEET
C1.0 OVERALL EXISTING CONDITIONS

GREGORY C. GAMBLE
TENNESSEE REGISTERED
LANDSCAPE ARCHITECT
5423

INITIAL SUBMITTAL: APRIL 10, 2023
RESUBMITTAL: MAY 4, 2023

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

SITE DATA TABLE

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COF PROJECT #:	8158
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PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
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SURVEY NOTES

1. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLAN COORDINATE SYSTEM, AND NAD 83 DATUM.
2. BASE INFORMATION WAS TAKEN FROM AN ALTA SURVEY PREPARED BY CIVIL A& ENVIRONMENTAL CONSULTANTS, INC., DATED 02-23-2022. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
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SITE SLOPE TABLE

	14% - 19.99%
	20% and above

EXISTING DETENTION POND NOTE

PER ASPEN GROVE MEDICAL OFFICE BUILDING PLANS, THE EXISTING DETENTION POND HAS BEEN DESIGNED AND CONSTRUCTED TO SERVE THE 101 COOL SPRINGS DEVELOPMENT.
DESIGNED STORAGE CAPACITY:=/- 31,000 CF
EXISTING POND PER SURVEY COMPLETED BY CEC DATED 9/14/2022:
AS-BUILT STAGE STORAGE CAPACITY: +/- 31,441 CF

GRAPHIC SCALE IN FEET
0 25 50 100

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION

FRANKLIN, TENNESSEE

RYAN McMASTER REGISTERED ENGINEER NO. 108969 STATE OF TENNESSEE 2023-05-04

No.	REVISIONS	DATE	BY
1			
2			
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6			
7			
8			
9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO. 118479000	

OVERALL EXISTING CONDITIONS

SHEET NUMBER
C1.0

COF #8158

Traffic Impact Study

101 Cool Springs Boulevard

May 2023

FOR SUBMITTAL TO:

City of Franklin, Tennessee

PREPARED FOR:

Rechler Equity Development LLC

Kimley»Horn

Traffic Impact Study

101 Cool Springs Boulevard

FOR SUBMITTAL TO:

City of Franklin, Tennessee

PREPARED FOR:

Rechler Equity Development LLC

PREPARED BY:

Kimley»Horn

4031 Aspen Grove Drive

Franklin, Tennessee 37067

615.564.2701

May 2023

Project Number 118479000

05/04/2023

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1.2 Development Improvement Recommendations 4

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Appendix B: Traffic Count Data

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Appendix D: *Synchro* Reports

1.0 EXECUTIVE SUMMARY

This traffic study re-evaluated the anticipated traffic impacts associated with the *101 Cool Springs Boulevard* development, which is expected to be completed in 2025 (referred to herein as build-out year). As currently envisioned, the development will consist of multifamily housing with approximately 178 dwelling units and 3,500 SF of retail space. The approximate 2.91-acre site is located north of Cool Springs Boulevard and east of Mack Hatcher Parkway within the City of Franklin, Tennessee. The development of the 101 Cool Springs Boulevard site was previously evaluated as a 60,000 sf office complex and included in the Join TIA prepared for the 101, 151 and 201 Cool Springs Boulevard sites. Due to the change in land uses proposed for the 101 Cool Springs Boulevard Site and a slight increase in the expected trip generation, a re-evaluation was requested by the City of Franklin.

The following scenarios were considered in this analysis:

- Existing 2023 Conditions
- Projected 2025 No-Build Conditions
- Projected 2025 Build Conditions
- Projected 2030 No-Build Horizon Conditions
- Projected 2030 Build Horizon Conditions

The study network for this analysis includes the following intersections:

1. Mack Hatcher Parkway and Cool Springs Boulevard
2. Cool Springs Boulevard at Site Driveway/Commercial Driveway
3. Cool Springs Boulevard at Windcross Court
4. Cool Springs Boulevard at McEwen Drive

The proposed development will be served by two driveways:

- Right-in/right-out (RIRO) driveway along Cool Springs Boulevard approximately 475' east of Mack Hatcher Parkway – currently full access driveway which will be converted to RIRO with other developments and is assumed to be in place by the Projected 2025 No-Build conditions.
- Extension of Windcross Court to become the north leg of the existing signalized intersection also to be completed by others and assumed in place by the Projected 2025 No-Build conditions.

1.1 NO-BUILD IMPROVEMENT RECOMMENDATIONS

The following development improvements are recommended to serve the Projected 2025 No-Build traffic conditions (Note: this would be the improvements needed to serve the background traffic and is unrelated to the *101 Cool Springs Boulevard* development).

- All Intersections
    - It is recommended for the City to continue to monitor actual traffic patterns and volumes and develop updated signal timing plans in order to optimize intersection operations and minimize delays and queue as approved developments continue to develop in the area

1.2 DEVELOPMENT IMPROVEMENT RECOMMENDATIONS

The following development improvements are recommended to serve the Projected 2025 Build traffic conditions (Note: this would be the improvements needed to serve the traffic associated with the *101 Cool Springs Boulevard* development).

- Intersection 1 – Mack Hatcher Parkway at Cool Springs Boulevard
    - Replace all existing traffic signal backplates with new retroreflective yellow backplates
    - Extend the existing concrete channelized island for the westbound right-turn movement to the north to provide barrier separation for the free-flow slip lane traveling west along Cool Springs Boulevard to north along Mack Hatcher Parkway
    - Extend the westbound left-turn lane to provide 735’ of storage
- Intersection 2 – Cool Springs Boulevard at Site Driveway
    - With the extension of the westbound left-turn lane at the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), provide an additional turn lane pocket to provide 100’ of storage for the westbound left-turn movement at Cool Springs Boulevard at Site Driveway (Intersection 2).
- Intersection 3 – Cool Springs Boulevard at Windcross Court
    - Extend the eastbound left-turn lane to provide 340’ of storage
- Note: A concept graphic illustrating the recommended improvements is provided in **Appendix A**.

2.0 INTRODUCTION

This report presents the re-evaluation of the anticipated traffic impacts associated with the *101 Cool Springs Boulevard* development, which is expected to be completed in 2025 (referred to herein as build-out year). As currently envisioned, the development will consist of multifamily housing with approximately 178 dwelling units and 3,500 SF of retail space. The approximate 2.91-acre site is located north of Cool Springs Boulevard and east of Mack Hatcher Parkway within the City of Franklin, Tennessee. The development of the 101 Cool Springs Boulevard site was previously evaluated as a 60,000 sf office complex and included in the Join TIA prepared for the 101, 151 and 201 Cool Springs Boulevard sites. Due to the change in land uses proposed for the 101 Cool Springs Boulevard Site and a slight increase in the expected trip generation, a re-evaluation was requested by the City of Franklin.

This report will summarize the analyses of the following scenarios:

- Existing 2023 Conditions
- Projected 2025 No-Build Conditions
- Projected 2025 Build Conditions
- Projected 2030 No-Build Horizon Conditions
- Projected 2030 Build Horizon Conditions

The study network for this analysis includes the following intersections:

1. Mack Hatcher Parkway and Cool Springs Boulevard
2. Cool Springs Boulevard at Site Driveway/Commercial Driveway
3. Cool Springs Boulevard at Windcross Court
4. Cool Springs Boulevard at McEwen Drive

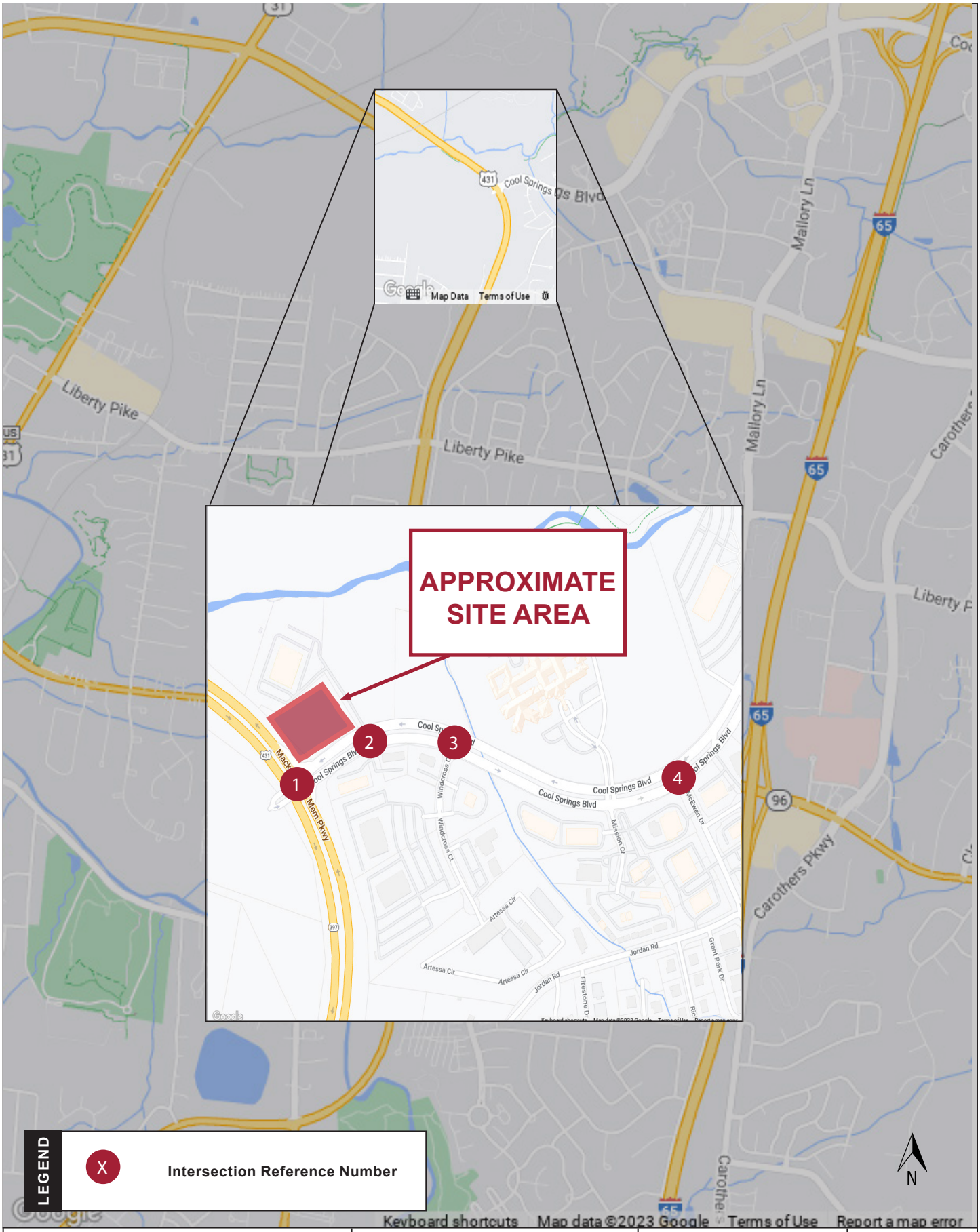
The proposed development will be served by two driveways:

- Right-in/right-out (RIRO) driveway along Cool Springs Boulevard approximately 475' east of Mack Hatcher Parkway – currently full access driveway which will be converted to RIRO with other developments and is assumed to be in place by the Projected 2025 No-Build conditions.
- Extension of Windcross Court to become the north leg of the existing signalized intersection also to be completed by others and assumed in place by the Projected 2025 No-Build conditions.

For the purposes of this traffic impact study, Cool Springs Boulevard is considered to have an east-west orientation. Mack Hatcher Parkway, Windcross Court, McEwen Drive, Commercial Driveway, and the existing site driveway are considered to have a north-south orientation.

Figure 1 provides a location map of the project site. **Figure 2** provides an aerial image of the project site.

A site plan is also included in **Appendix A**.



Kimley»Horn	101 Cool Springs Boulevard TIS	Site Location Map	Figure 1

K:\NSH_LDEV\118322001 - 101 CS Blvd\5-Traffic\4-Report\Figures

Kimley»Horn	101 Cool Springs Boulevard TIS	Site Aerial	Figure 2

K:\NSH_LDEV\118322001 - 101 CS Blvd\5-Traffic\4-Report\Figures

3.0 EXISTING CONDITIONS

3.1 VEHICULAR NETWORK

Characteristics for the roadways within the study are summarized in **Table 1**. The existing road geometry is illustrated in **Figure 3.**

Table 1: Roadway Network

Roadway	Number of Lanes	Posted Speed Limit (MPH)	Functional Classification	2022 TDOT AADT
Cool Springs Boulevard	4	40	Major Arterial	25,793
Mack Hatcher Parkway	4	45	Freeway/Expressway	29,532
Windcross Court	2	N/A	Local	N/A
McEwen Drive	4	30	Major Arterial	12,411

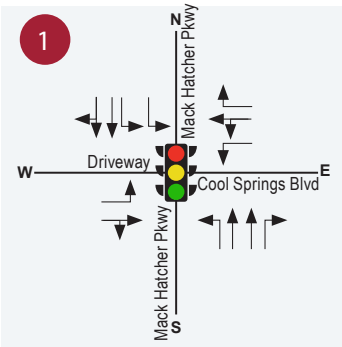
3.2 VEHICULAR VOLUMES

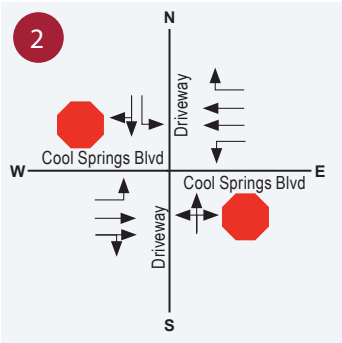
Vehicle peak hour turning movement counts (TMCs) were determined from multiple sources. New traffic counts were collected for the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1) on September 13, 2022. 2020 turning movement counts provided in the Cool Springs Transportation Study (CSTS) model were used as the base for existing counts at the intersections of Cool Springs Boulevard at Windcross Court (Intersection 3) and Cool Springs Boulevard at McEwen Drive (Intersection 4). Based on conversations with City of Franklin traffic engineering staff, the 2020 counts were considered as 2023 counts without any growth adjustment due to traffic patterns changing and/or decreasing within the study network. However, the counts were balanced with the most recent count from Mack Hatcher Parkway with magnetometer data used to determine the existing distribution between turning movements to balance accordingly. The counts for the minor street movements at the intersection of Cool Springs Boulevard at Site Driveway (Intersection 2) were taken directly from the 201 Cool Springs Boulevard (CSB) Joint TIS completed by Neel-Schaffer in 2016. The through volumes were balanced with Intersection 1. The count dates, timeframes, and observed peak hours for each study intersection are shown in **Table 2**.

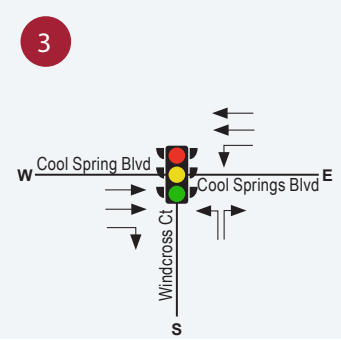
Table 2: Existing Turning Movement Count Sources

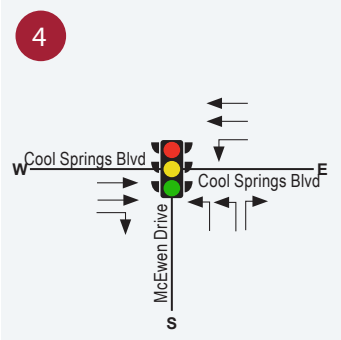
Intersection	Count Year	Count Source
1. Mack Hatcher Parkway at Cool Springs Boulevard	2022	Collected
2. Cool Springs Boulevard at Site Driveway	2022/2016	Balanced/ 201 CSB Joint TIS
3. Cool Springs Boulevard at Windcross Court	2020	Balanced/ 201 CSB Joint TIS
4. Cool Springs Boulevard at McEwen Drive	2020	CSTS Model

The Existing 2023 peak hour traffic volumes are shown in **Figure 4**. The 2022 collected traffic count data is provided in **Appendix B**.









LEGEND

- Existing Lanage
- Existing Traffic Signal
- Existing Stop Sign

N

Kimley»Horn	101 Cool Springs Boulevard TIS	Existing 2023 Intersection Geometry	Figure 3

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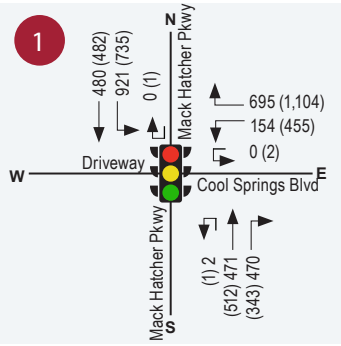

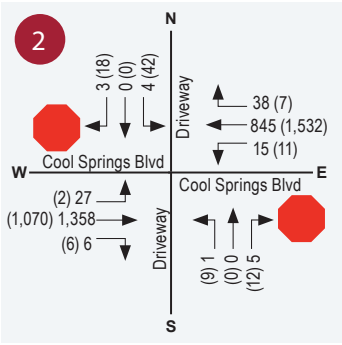

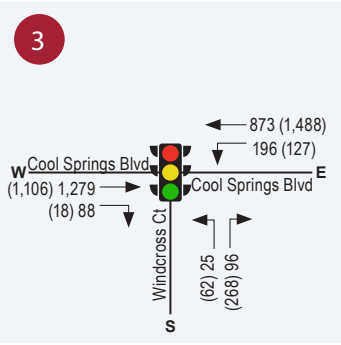

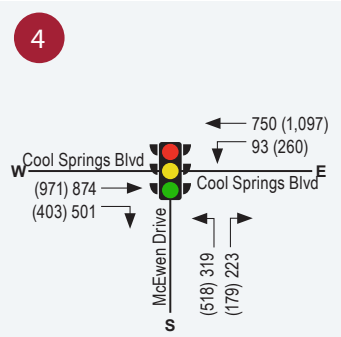

LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	Existing 2023 Traffic Volumes	Figure 4

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3.3 HISTORICAL CRASH DATA

Using the *AASHTOWare Safety* tool, historical crash data from 2020-2022 was collected for the intersections and corridors in this study. Crash type, manner of collision and crash rates were collected at each location. The crash summaries are provided in **Table 3**. The 2019-2020 TDOT crash rates were collected for each intersection and segment in the study network and are provided in the table.

Table 3: Crash Summary

Location	Crash Type					Manner of Collision				Rates	
	Fatal	Serious Injury	Possible Injury	Minor Injury	PDO	Angle	No Vehicle Collision	Rear End	Sideswipe	Crash Rate	TDOT Crash Rate
Intersections											
1.Mack Hatcher Pkwy at Cool Springs Blvd	0	0	1	3	36	4	2	24	6	1.293	0.714
2.Cool Springs Blvd at Site Driveway	0	0	1	0	1	1	1	0	0	0.000	0.551
3.Cool Springs Blvd at Windcross Ct	0	0	0	0	7	1	0	4	1	0.301	0.714
4.Cool Springs Blvd at McEwen Dr	0	0	0	1	9	2	1	7	0	0.339	0.714
Segments											
Cool Springs Blvd between Mack Hatcher Parkway & Windcross Ct	0	0	1	0	2	0	1	1	1	0.595	2.027
Cool Springs Blvd between Windcross Ct & McEwen Dr	0	0	1	1	21	4	1	13	4	0.947	2.027

With the exception of the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), all intersections and segments report below their respective TDOT crash rates averages.

The intersection of Mack Hatcher Parkway at Cool Springs Boulevard shows a crash rate of 1.29 over the 0.714 TDOT average. However, although the rate is higher, data shows that only 4 of the 36 collected collisions registered 1 possible injury and 3 minor injuries. The data shows no fatal or serious injuries registered. Approximately 90% of the collisions were registered as property damage only, with over 60% being rear end collisions.

To minimize rear end collisions, it is recommended for the city to continue to monitor traffic volumes and update signal timings to minimize queuing. In addition, it is recommended that the existing traffic signal backplates be changes to yellow retro reflective backplates.

Additionally, the following improvements were discussed with the City:

- Intersection 1 – Mack Hatcher Parkway at Cool Springs Boulevard
    - Extend the existing concrete channelized island for the westbound right-turn movement to the north to provide barrier separation for the free-flow slip lane traveling west along Cool Springs Boulevard to north along Mack Hatcher Parkway
    - Extend the westbound left-turn lane to provide 735' of storage
- Intersection 2 – Cool Springs Boulevard at Site Driveway
    - With the extension of the westbound left-turn lane at the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), provide an additional turn lane pocket to provide 100' of storage for the westbound left-turn movement at Cool Springs Boulevard at Site Driveway (Intersection 2).
- Intersection 3 – Cool Springs Boulevard at Windcross Court
    - Extend the eastbound left-turn lane to provide 340' of storage
- Note: A concept graphic illustrating the recommended improvements is provided in **Appendix A**.

4.0 NO-BUILD CONDITIONS

Background traffic is defined as expected traffic on the roadway in future year(s) absent the construction and opening of the proposed project. Background traffic can include a base growth rate based on historical count data as well as population growth data and estimates.

To account for background traffic, the existing traffic volumes were increased by a growth of 2% per year for two years to account for the expected background growth through year 2025. Additionally, the existing traffic volumes were increased by a growth of 2% per year for seven years to account for the expected background growth through year 2030 for the Horizon Year analysis. Movements associated with the site driveway, commercial driveway, and Windcross Court were not grown since these were derived from existing counts or project specific trip generations.

Project trips from approved developments considered in the Cool Springs Transportation Study (CSTS) model were also added to the existing traffic in addition to the background growth rate. Additionally, project trips from The Optima Franklin development, which were not included in the CSTS model, were included in the calculations. The developments in the CSTS model have varying build-out years from now through 2030. However, for the purpose of this study, conservatively all developments were included in the 2025 background traffic projects regardless of the actual build out year of the individual development. In addition, since the CSTS model was completed in 2020, three years ago, some developments, or portions of them have been completed. These projects were excluded from the No-Build models, since traffic from these developments would have been captured in the existing counts. The assumptions for the current build-out state and peak trips included in the model are provided by approved development below in **Table 4**. **Figure 5 and 6** illustrates the Projected 2025 and 2030 No-Build traffic volumes, respectively. Volume development worksheets are provided in **Appendix C** which show the calculations for the No-Build traffic volumes.

Table 4: CSTS Model Approved Developments					
Development Name	**Build-Out Year**	**Current % Occ.**	**Daily Trips**	**AM Peak Trips**	**PM Peak Trips**
1. Liberty Station	2019	100%	0	0	0
2. Franklin Summit	N/A	0%	6,354	475	628
3. Aureum	2026	0%	20,715	1,279	1,738
4. Ovation	2030	15%	27,249	1,852	2,413
5. Huffines Ridge	2023	0%	5,365	383	441
6. Carothers Crossing West	2023	95%	203	14	14
7. Carothers Crossing East	2022	100%	0	0	0
8. Apex Village	N/A	0%	12,796	790	663
9. Franklin Park	2028	40%	23,765	1,538	1,707
10. East Works	2032	0%	30,309	2,331	2,316
11. 7086 Bakers Bridge Avenue	2022	100%	0	0	0
12. The Franklin at Legends	Removed – Added Joint TIS Trips*				
13. Mallory Green	2020	100%	0	0	0
14. McEwen Town Center	2032	20%	22,717	680	1,256
15. Avalon Square	N/A	0%	27,502	1,824	2,322
16. Vintage Franklin	2024	0%	4,695	398	420

**Trip generation for the 201/151 CSB Joint TIS was modified to remove the previous assumptions for the 101 Cool Springs Boulevard development and added to each intersection based on the distribution provided in the TIS*

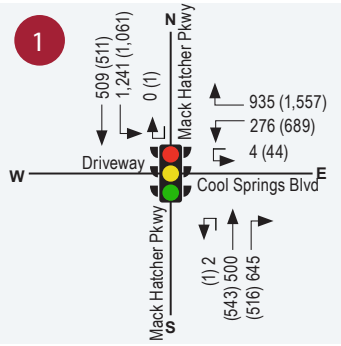
4.1 FUTURE TRANSPORTATION INFRASTRUCTURE IMPROVEMENTS

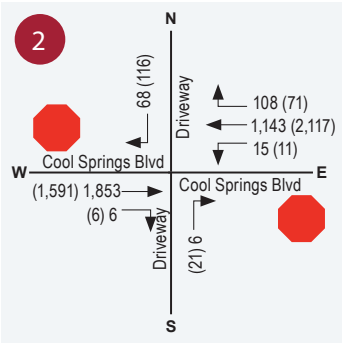
With the development of the projects listed in Table 4, the following improvements were assumed to be completed prior to the Year 2025 Build scenario, since these improvements are condition of approval for some of these development projects:

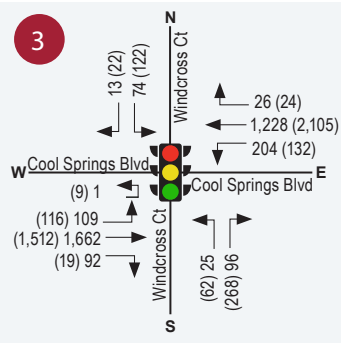
- Intersection 2: Cool Springs Boulevard at Site Driveway/Commercial Driveway
  - Convert the existing full-movement intersection to a right-in/right/out (RIRO) for the southbound approach (north leg)
  - Restripe the existing southbound left-turn lane as an additional southbound right-turn lane (north leg)
  - Prohibit northbound left-turns from exiting the existing commercial driveway (south leg)
  - Maintain allowing the westbound left-turn into the existing commercial driveway (south leg)
- Intersection 3: Cool Springs Boulevard at Windcross Court
  - Construct the north leg of the intersection with one southbound left-turn and one southbound shared through/right-turn lane
  - Restripe the northbound approach to include one northbound left-turn and one northbound shared through/right-turn lane
  - Provide protected-permissive left-turn phasing for all approaches

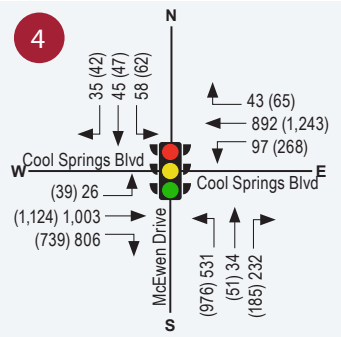
- Intersection 4: Cool Springs Boulevard at McEwen Drive
    - Construct the north leg of the intersection with one southbound left-turn lane, one southbound through lane, and one southbound right-turn lane
    - Provide a westbound right-turn lane
    - Provide an eastbound left-turn lane
    - Provide a northbound through lane
    - Provide protected-permissive left-turn phasing for the southbound, eastbound, and westbound approaches
    - Provide protected only left-turn phasing for the northbound approach

Figure 7 illustrates the intersection geometry assumed for the 2025 and 2030 No-Build conditions.









LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	No-Build 2025 Traffic Volumes	Figure 5

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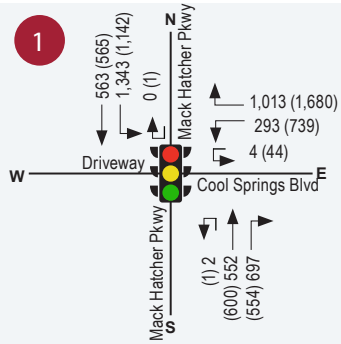

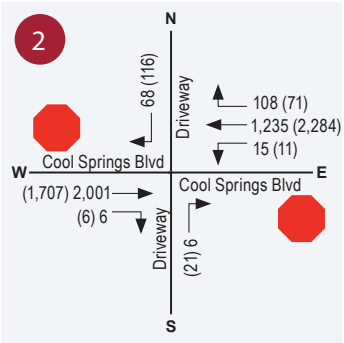

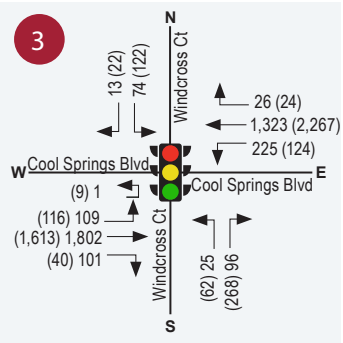

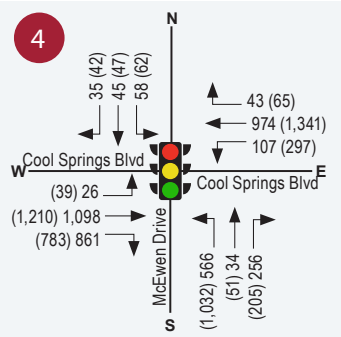

LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

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Kimley»Horn	101 Cool Springs Boulevard TIS	No-Build 2030 Horizon Traffic Volumes	Figure 6

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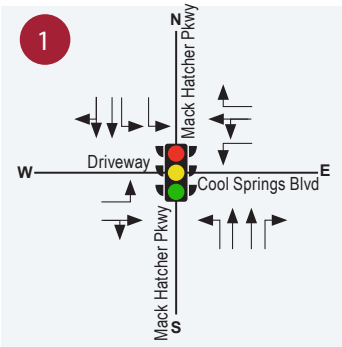

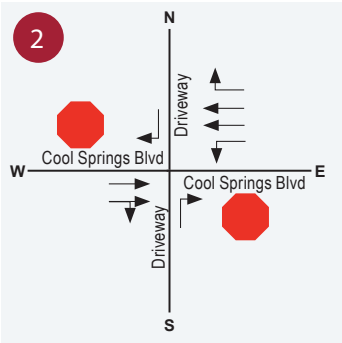

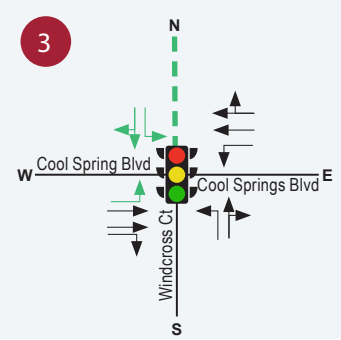

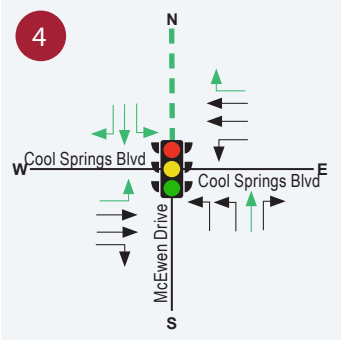

LEGEND

- Existing Laneage
- No-Build Laneage
- No-Build New Roadway
- Existing Traffic Signal
- Existing Stop Sign

N

Kimley»Horn	101 Cool Springs Boulevard TIS	No-Build Intersection Geometry	Figure 7

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5.0 BUILD CONDITIONS

5.1 SITE ACCESS AND CIRCULATION

The proposed project will have access from Intersection 2 (Cool Springs Boulevard at Commercial Driveway) and Intersection 3 (Cool Springs Boulevard and Windcross Court). Both of these intersections will be modified by others prior to this development as described in *Section 4.1*.

5.2 TRIP GENERATION

Traffic for the proposed development was calculated using rates and equations contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, *11th Edition*, using equations where available.

Internal capture (or mixed-use) reductions represent the concept that trips generated by individual land uses within a site may remain internal to the site. Mixed-use vehicle trip reductions are calculated using guidance from the *ITE Trip Generation Handbook, 3rd Edition*.

Alternative modes of transportation include pedestrians, bicyclists, and transit users. Alternate mode reductions account for the notion that some site-generated trips will occur by a means other than an automobile.

A pass-by trip occurs when a proposed development diverts traffic that is already traveling on a street adjacent to the site. Pass-by reductions are calculated using guidance from the *ITE Trip Generation Handbook, 3rd Edition*.

Although the site is likely to generate some alternative mode and/or pass-by trips, the trip generation for the site was determined with only internal capture reductions to the gross trips in order to present a more conservative analysis. However, the internal capture reductions were conservatively limited to 10% for the retail use.

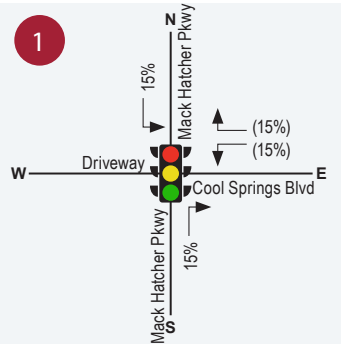
Table 5 summarizes the project trip generation. **Appendix C** provides a detailed trip generation worksheet for the proposed development.

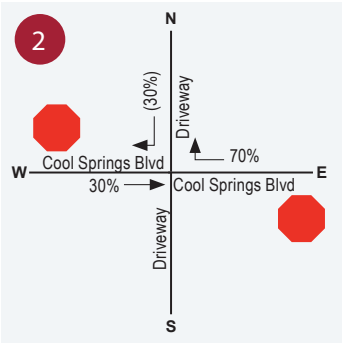
Table 5: Trip Generation								
ITE Code	Land Use	Density	Daily		AM Peak Hour		PM Peak Hour	
			Enter	Exit	Enter	Exit	Enter	Exit
220	Multifamily Housing (Low-Rise)	178 units	608	608	19	59	61	36
822	Strip Retail Plaza (<40ksf) (Proposed)	3,500 SF	189	189	8	6	19	18
Gross Trips			**797**	**797**	**27**	**65**	**80**	**54**
Reduction – Internal Capture			*-19*	*-19*	*0*	*0*	*-2*	*-2*
New Trips			**778**	**778**	**27**	**65**	**78**	**52**

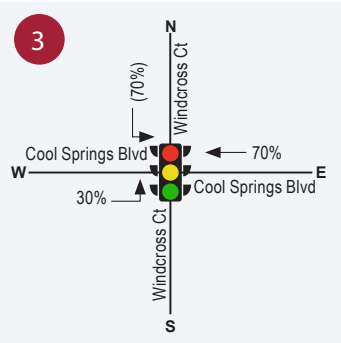
5.3 TRIP DISTRIBUTION AND ASSIGNMENT

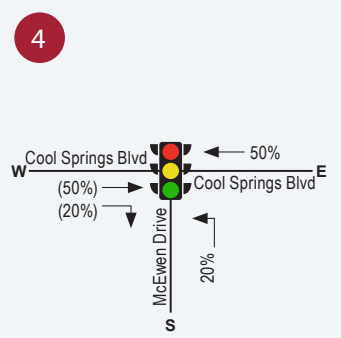
The directional distribution and assignment of new project trips was based on a review of land uses and population densities in the area and the existing peak hour turning movement counts. **Figure 8** illustrates the directional distribution and assignment of new project trips. **Figure 9** illustrates the assignment of project trips to the study network. The Projected 2025 and 2030 Build peak hour volumes are shown in **Figure 10 and 11,** respectively.

Appendix C provides intersection volume worksheets for all intersections and driveways within the study network.









LEGEND

→	Turning Movement	XX	% Entering Trips
	Existing Traffic Signal	(XX)	% Exiting Trips
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	Trip Distribution & Assignment	Figure 8

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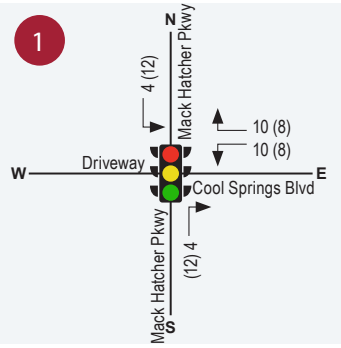

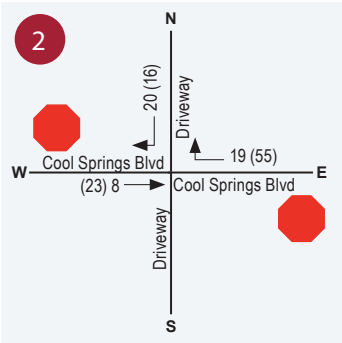

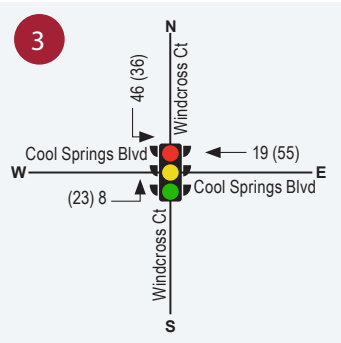

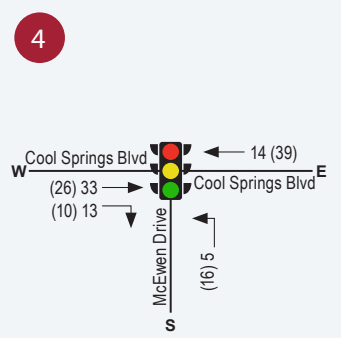

LEGEND

→	Turning Movement	XX	AM Peak Hour Project Trips
	Existing Traffic Signal	(XX)	PM Peak Hour Project Trips
	Existing Stop Sign		

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Kimley»Horn	101 Cool Springs Boulevard TIS	Project Trips	Figure 9

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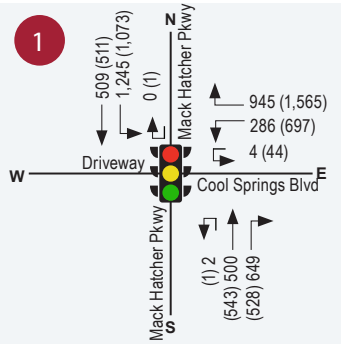

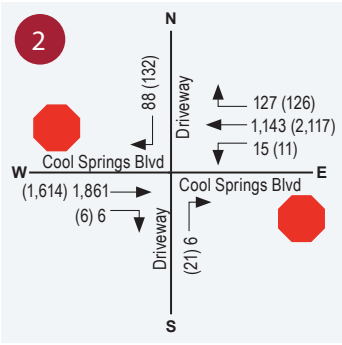

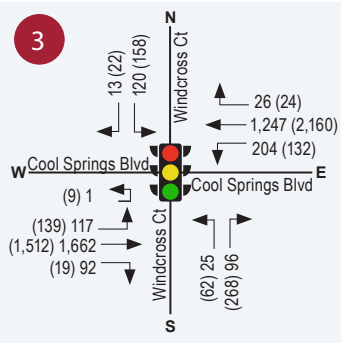

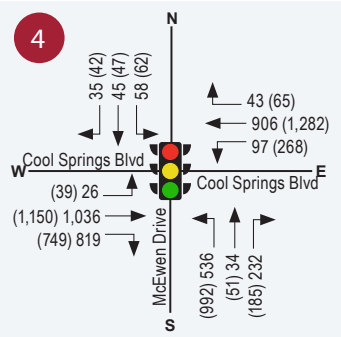

LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	2025 Build Traffic Volumes	Figure 10

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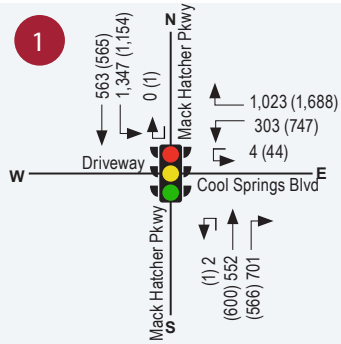

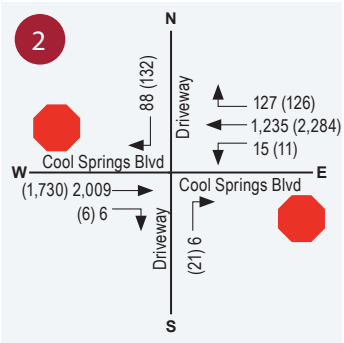

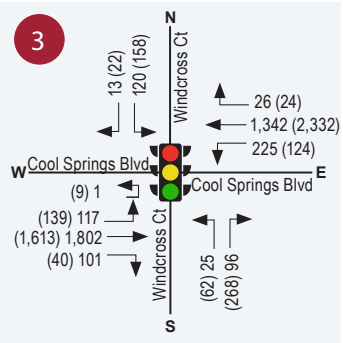

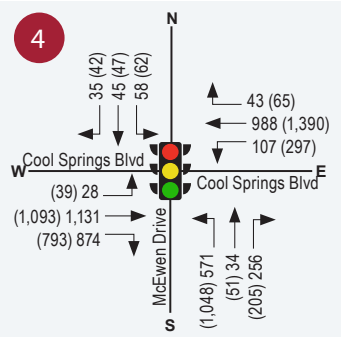

LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	2030 Build Traffic Volumes	Figure 11

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6.0 CAPACITY ANALYSES

6.1 INTERSECTION CAPACITY ANALYSIS

Level-of-service (LOS) determinations were made for the weekday AM and PM peak hours for the study network intersections using *Synchro, Version 11.0. Synchro* software uses methodologies contained in the *Highway Capacity Manual, 6th Edition* to determine the operating characteristics of an intersection. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a specified period under prevailing roadway, traffic, and control conditions.

LOS is used to describe the operating characteristics of a road segment or intersection in relation to its capacity. LOS is defined as a qualitative measure that describes operational conditions and motorists' perceptions of a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A being the best and F the worst.

Levels-of-service for unsignalized intersections, with stop control on the minor street only, are reported for the side-street approaches and major street left-turns. Low levels-of-service for side street approaches are not uncommon, as vehicles may experience significant delay turning onto a major roadway.

Levels-of-service for signalized intersections are reported for the intersection as a whole. One or more movements at an intersection may experience a low level-of-service, while the intersection as a whole may operate acceptably.

Note: Due to software limitations, U-turn movements were added to the adjacent left-turn or through movements (depending on intersection configuration) to include those volumes in the analyses.

The results of the capacity analyses are summarized in **Table 8**. The *Synchro* analyses reports are included in **Appendix D**.

Table 6: Level-of-Service Summary *(Delay in Seconds)*												
Intersection	Control	Approach/ Movement	Existing 2023		No-Build 2025		Build 2025		No-Build 2030 Horizon Year		Build 2030 Horizon Year	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Mack Hatcher Pkwy at Cool Springs Blvd	Signal	NBT	B (19.6)	C (31.2)	D (36.3)	E (56.2)	D (36.3)	E (56.9)	D (37.6)	E (63.7)	D (37.6)	E (64.5)
		NBR	C (21.2)	B (18.3)	D (51.2)	C (33.9)	D (52.3)	C (34.4)	E (69.6)	D (35.9)	E (71.2)	D (36.5)
		SBL	D (43.0)	E (58.3)	D (48.5)	D (54.7)	D (48.9)	D (54.9)	E (63.2)	E (57.5)	E (64.0)	E (58.2)
		SBT	A (2.7)	A (5.6)	A (4.7)	B (10.6)	A (4.7)	B (10.7)	A (4.8)	B (11.5)	A (4.8)	B (11.6)
		WBL	D (46.1)	E (76.9)	D (50.0)	E (68.9)	D (50.4)	E (69.1)	D (50.8)	E (70.7)	D (51.4)	E (71.1)
		WBR	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
		NB	C (20.4)	C (26.0)	D (44.7)	D (45.3)	D (45.3)	D (45.8)	E (55.4)	D (50.3)	E (56.4)	D (50.9)
		SB	C (29.2)	D (37.4)	D (35.8)	D (40.3)	D (36.1)	D (40.7)	D (46.0)	D (42.3)	D (46.6)	D (42.9)
		WB	D (46.1)	E (76.9)	D (50.0)	E (68.9)	D (50.4)	E (69.1)	D (50.8)	E (70.7)	D (51.4)	E (71.1)
		Overall	C (26.9)	D (40.7)	D (40.3)	D (48.1)	D (40.7)	D (48.5)	D (49.8)	D (50.9)	D (50.5)	D (51.5)
2. Cool Springs Blvd at Commercial Dwy/Site Dwy	TWSC	NB	C (19.4)	C (23.1)	C (19.8)	C (17.6)	C (19.9)	C (17.9)	C (21.7)	C (18.9)	C (21.8)	C (19.2)
		SB	C (20.8)	F (67.8)	B (14.7)	E (46.4)	C (15.3)	F (54.2)	C (15.6)	F (61.3)	C (16.3)	F (74.6)
		EBL	B (10.1)	B (14.1)								
		WBL	B (12.9)	B (11.0)	C (17.9)	B (14.9)	C (18.0)	C (15.1)	C (20.0)	C (16.0)	C (20.1)	C (16.3)

Table 6: Level-of-Service Summary *(Delay in Seconds)*												
Intersection	Control	Approach/ Movement	Existing 2023		No-Build 2025		Build 2025		No-Build 2030 Horizon Year		Build 2030 Horizon Year	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
3. Cool Springs Blvd at Windcross Ct	Signal	NBL	D (39.6)	F (86.1)	D (47.4)	E (61.8)	D (47.4)	E (60.9)	D (47.4)	E (60.8)	D (47.4)	E (60.0)
		NBT			A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
		NBR	D (54.2)	F (113.1)	F (82.2)	F (94.5)	F (82.2)	F (95.5)	F (82.2)	F (95.6)	F (82.2)	F (96.6)
		SBL			D (49.2)	E (77.6)	D (54.4)	F (114.9)	D (49.2)	E (71.3)	D (54.4)	F (99.0)
		SBT			A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
		SBR			D (48.9)	E (64.2)	D (47.9)	E (63.3)	D (48.9)	E (62.3)	D (47.9)	E (61.4)
		EBL			B (13.5)	E (72.1)	B (14.7)	E (78.5)	B (15.0)	F (84.0)	B (16.6)	F (92.0)
		EBT	B (10.4)	A (5.8)	C (27.1)	B (19.6)	C (28.9)	C (20.4)	D (35.6)	C (22.6)	D (39.1)	C (23.6)
		EBR	A (6.4)	A (3.8)	B (11.6)	A (7.5)	B (12.1)	A (7.8)	B (11.7)	A (8.1)	B (12.2)	A (8.5)
		WBL	B (12.9)	A (4.4)	E (60.4)	C (22.4)	E (64.1)	C (23.2)	F (113.7)	C (28.8)	F (120.3)	C (29.0)
		WBT	A (0.3)	A (0.5)	B (16.2)	C (31.3)	B (17.2)	E (68.9)	B (17.1)	F (81.2)	B (18.2)	F (109.8)
		WBR			B (16.1)	C (32.0)	B (17.1)	E (70.3)	B (17.1)	F (82.9)	B (18.1)	F (111.5)
		NB	D (51.2)	F (101.5)	E (75.0)	F (83.4)	E (75.0)	F (84.2)	E (75.0)	F (84.3)	E (75.0)	F (85.3)
		SB			D (49.2)	E (75.5)	D (53.7)	F (108.6)	D (49.2)	E (69.9)	D (53.7)	F (94.4)
		EB	B (10.1)	A (5.8)	C (25.6)	C (23.4)	C (27.2)	C (25.4)	C (33.3)	C (26.6)	D (36.5)	C (28.9)
		WB	A (2.6)	A (0.8)	C (22.4)	C (31.1)	C (23.6)	E (67.0)	C (30.9)	E (79.3)	C (32.6)	F (106.6)
		Overall	A (8.9)	A (7.8)	C (26.5)	C (31.8)	C (28.3)	D (53.4)	C (34.0)	E (58.6)	D (36.7)	E (75.1)

Table 6: Level-of-Service Summary *(Delay in Seconds)*												
Intersection	Control	Approach/ Movement	Existing 2023		No-Build 2025		Build 2025		No-Build 2030 Horizon Year		Build 2030 Horizon Year	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
4. Cool Springs Blvd at McEwen Dr	Signal	NBL	D (49.4)	F (94.5)	D (52.3)	E (75.1)	D (52.3)	E (78.9)	D (52.4)	F (133.4)	D (52.4)	F (140.3)
		NBT			D (36.6)	D (37.1)	D (36.5)	D (37.1)	D (35.7)	D (40.7)	D (35.5)	D (40.7)
		NBR	D (53.5)	D (53.5)	D (36.8)	C (24.5)	D (36.6)	C (24.5)	D (35.9)	C (28.1)	D (35.7)	C (28.1)
		SBL			E (66.6)	F (103.0)	E (66.6)	F (103.0)	E (66.6)	F (103.2)	E (66.6)	F (103.2)
		SBT			D (54.2)	E (77.7)	D (54.2)	E (77.7)	D (54.2)	E (77.7)	D (54.2)	E (77.7)
		SBR			D (54.2)	E (70.1)	D (54.2)	E (70.1)	D (54.2)	E (70.1)	D (54.2)	E (70.1)
		EBL			E (61.3)	F (90.3)	E (60.9)	F (89.2)	E (59.2)	F (88.0)	E (59.2)	F (86.8)
		EBT	B (12.1)	B (16.9)	C (28.5)	F (108.2)	C (29.1)	F (117.8)	C (31.3)	F (94.3)	C (32.1)	F (102.7)
		EBR	A (7.5)	A (5.5)	C (21.4)	C (26.2)	C (21.7)	C (26.5)	C (23.5)	C (28.2)	C (24.7)	C (28.4)
		WBL	A (8.1)	B (16.5)	E (78.0)	F (133.8)	E (78.0)	F (133.8)	F (80.5)	F (172.0)	F (80.5)	F (172.0)
		WBT	A (5.3)	A (8.9)	C (23.8)	D (47.8)	C (24.2)	D (50.2)	C (26.0)	D (45.2)	C (26.4)	D (47.5)
		WBR			B (17.0)	C (22.5)	B (17.1)	C (22.5)	B (17.6)	B (19.8)	B (17.7)	B (19.8)
		NB	D (51.1)	F (84.0)	D (47.1)	E (65.8)	D (47.1)	E (69.0)	D (46.8)	F (113.0)	D (46.8)	F (118.8)
		SB			E (59.4)	F (85.9)	E (59.4)	F (85.9)	E (59.4)	F (86.0)	E (59.4)	F (86.0)
		EB	B (10.4)	B (13.6)	C (25.8)	E (76.0)	C (26.3)	F (81.9)	C (28.3)	E (68.7)	C (29.2)	E (73.9)
		WB	A (5.6)	B (10.3)	C (28.6)	E (61.4)	C (28.8)	E (63.0)	C (30.9)	E (66.3)	C (31.1)	E (67.7)
		Overall	B (16.9)	C (26.6)	C (32.3)	E (69.0)	C (32.5)	E (72.6)	C (33.9)	E (79.4)	C (34.4)	F (83.3)

Substandard MOVEMENT LOS per City of Franklin guidelines

Substandard OVERALL LOS per City of Franklin guidelines

The City of Franklin Traffic Impact Study (TIS) Guidelines define the substandard LOS for intersection turning movements as LOS F and the overall intersection as LOS E and LOS F.

Under existing PM conditions, the southbound approach at the intersection of Cool Springs Boulevard and Site Driveway (Intersection 2) operates at LOS F. Low levels-of-service for side street approaches are not uncommon, as vehicles may experience significant delay turning onto a major roadway. However, this is projected to be mitigated or reduced with the No-Build improvements prohibiting minor street left-turns. Delay and queues associated with this approach are only impacting the site and do not impact the through movements along Cool Springs Boulevard. The northbound left and northbound right movements at the intersection of Cool Springs Boulevard at Windcross Court (Intersection 3) operates at LOS F during the PM peak hour. Additionally, the northbound left movement at the intersection of Cool Springs Boulevard at McEwen Drive (Intersection 4) operates at LOS F during the PM peak hour.

Under No-Build AM conditions, the northbound right movement at the intersection of Cool Springs Boulevard and Windcross Court (Intersection 3) is projected to operate at LOS F. Under No-Build PM conditions, the northbound right movement at the intersection of Cool Springs Boulevard and Windcross Court (Intersection 3) and the southbound left, eastbound left, eastbound through, and westbound left movements at Cool Springs Boulevard and McEwen Drive (Intersection 4) are projected to operate at LOS F. Windcross Court and McEwen Drive (Intersection 4) is projected to operate at overall LOS E during the No-Build PM peak. The No-Build conditions represent the projected traffic conditions without the *101 Cool Springs Boulevard* development.

Under the Build conditions, the substandard LOS from the No-Build conditions are projected to continue for the same movements with the addition of the southbound right movement at the intersection of Cool Springs Boulevard at Site Driveway (Intersection 2) and the southbound left movement at the intersection of Cool Springs Boulevard and Windcross Court (Intersection 3). Windcross Court and McEwen Drive (Intersection 4) is projected to operate at overall LOS E during the PM peak with an increase in delay of 3.2 seconds.

Under 2030 Horizon Year No-Build and Build conditions, delays will continue to increase with substandard movement and overall LOS indicated by the highlighted cells in the tables above.

6.2 QUEUEING ANALYSIS

The *Highway Capacity Manual 6th Edition* provides insight and guidance regarding the back of queue for signalized intersections.

"The back-of-queue position is the position of the vehicle stopped farthest from the stop line during the cycle as a consequence of the display of a red signal indication. The back-of-queue size depends on the arrival pattern of vehicles and on the number of vehicles that do not clear the intersection during the previous cycle." (Source: *Highway Capacity Manual 6th Edition*, Chapter 19)

A queueing analysis was performed using *Synchro* software to evaluate and determine the forecasted 95th percentile queue lengths for all signalized intersections within the study area. The queue lengths are summarized in **Table 9**. The 95th percentile queueing reports are included in the *Synchro* Reports, in **Appendix D**.

95th percentile queue lengths that are projected to exceed the available storage are indicated by the highlighted cells in the table below. As noted previously in *Section 3.3*, recommendations have been made to improve some storage lengths within the study network. For the purposes of the comparison table below, the existing storage lengths have been provided and compared to the projected queue lengths. The storage improvements are not incorporated into the table below.

Table 7: 95th Percentile Queue Results *(Length in Feet)*													
Intersection	Control	Approach/ Movement	Storage Length (ft)	Existing 2023		No-Build 2025		Build 2025		No-Build 2030 Horizon Year		Build 2030 Horizon Year	
				AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Mack Hatcher Pkwy at Cool Springs Blvd	Signal	NBT	-	164	301	238	376	238	376	264	#448	264	#448
		NBR	1000	267	251	#520	526	#527	545	#618	591	#624	614
		SBL	1000	#393	418	#638	642	#641	653	#727	#1415	#730	#1430
		SBT	-	61	104	80	149	80	149	90	166	90	166
		WBL	-	70	323	148	m313	150	m302	143	m369	m146	m363
		WBR	230	29	1025	535	m946	531	m887	566	m#1052	564	m#989
2. Cool Springs Blvd at Commercial Dwy/Site Dwy	TWSC	NB	-	3	7.5	2.5	5	2.5	5	2.5	7.5	2.5	7.5
		SB	-	3	57.5	15	85	20	107.5	15	105	22.5	130
		EBL	270	3	0								
		WBL	335	3	2.5	5	2.5	5	2.5	5	2.5	5	2.5
3. Cool Springs Blvd at Windcross Ct	Signal	NBL	-	41	125	43	107	43	107	43	110	43	110
		NBT				0	#335	0	#347	0	#443	1	#460
		NBR	150	47	#300	0	0	0	0	0	0	0	0
		SBL				97	#207	147	#307	97	198	147	#285
		SBT				0	0	0	0	0	0	0	0
		SBR				0	0	0	0	0	0	0	0
		EBL	260			m31	m126	m34	m160	m29	m36	m31	m42
		EBT	-	m431	516	m785	940	m781	941	m788	m313	m785	m314
		EBR	300	m16	m4	m10	m0	m10	m0	m11	m0	m11	m0
		WBL	235	m98	m16	#289	m82	#287	m80	#337	m68	#330	m65
		WBT	-	60	m107	432	m#1593	440	m#1644	478	m#1477	487	m#1527
		WBR				0	0	0	0	0	0	0	0
4. Cool Springs Blvd at McEwen Dr	Signal	NBL	-	#172	#428	265	#717	269	#736	285	#821	288	#840
		NBT				49	80	49	80	49	81	49	81
		NBR	300	127	140	153	111	153	111	174	152	174	152
		SBL				96	123	96	123	96	124	96	124
		SBT				77	100	77	100	77	100	77	100
		SBR				0	0	0	0	0	0	0	0
		EBL				m29	m59	m27	m58	m27	m57	m25	m56
		EBT	-	103	m121	m386	m#889	m405	m#895	m380	m#891	m419	m#918
		EBR	260	0	m17	m31	m779	m10	m754	m13	m817	m8	m812
		WBL	260	32	129	139	#516	139	#516	#167	#604	#167	#604
		WBT	-	106	275	404	803	412	#884	454	#919	462	#967
		WBR				0	15	0	15	0	14	0	14

Definitions

m = Volume for 95th percentile queue is metered by upstream signal

= 95th percentile volume exceeds capacity, queue may be longer

7.0 CONCLUSION

This traffic study re-evaluated the traffic impacts associated with the *101 Cool Springs Boulevard* development located north of Cool Springs Boulevard and east of Mack Hatcher Parkway within the City of Franklin, Tennessee. The development, which is approximately 2.91-acres in size, will include multifamily housing with approximately 178 dwelling units and 3,500 SF of retail space. The development of the 101 Cool Springs Boulevard site was previously evaluated as a 60,000 sf office complex and included in the Join TIA prepared for the 101, 151 and 201 Cool Springs Boulevard sites. Due to the change in land uses proposed for the 101 Cool Springs Boulevard Site and a slight increase in the expected trip generation, a re-evaluation was requested by the City of Franklin.

7.1 NO-BUILD IMPROVEMENT RECOMMENDATIONS

The following development improvements are recommended to serve the Projected 2025 No-Build traffic conditions (Note: this would be the improvements needed to serve the background traffic and is unrelated to the *101 Cool Springs Boulevard* development).

- All Intersections
    - It is recommended for the City to continue to monitor actual traffic patterns and volumes and develop updated signal timing plans in order to optimize intersection operations and minimize delays and queue as approved developments continue to develop in the area

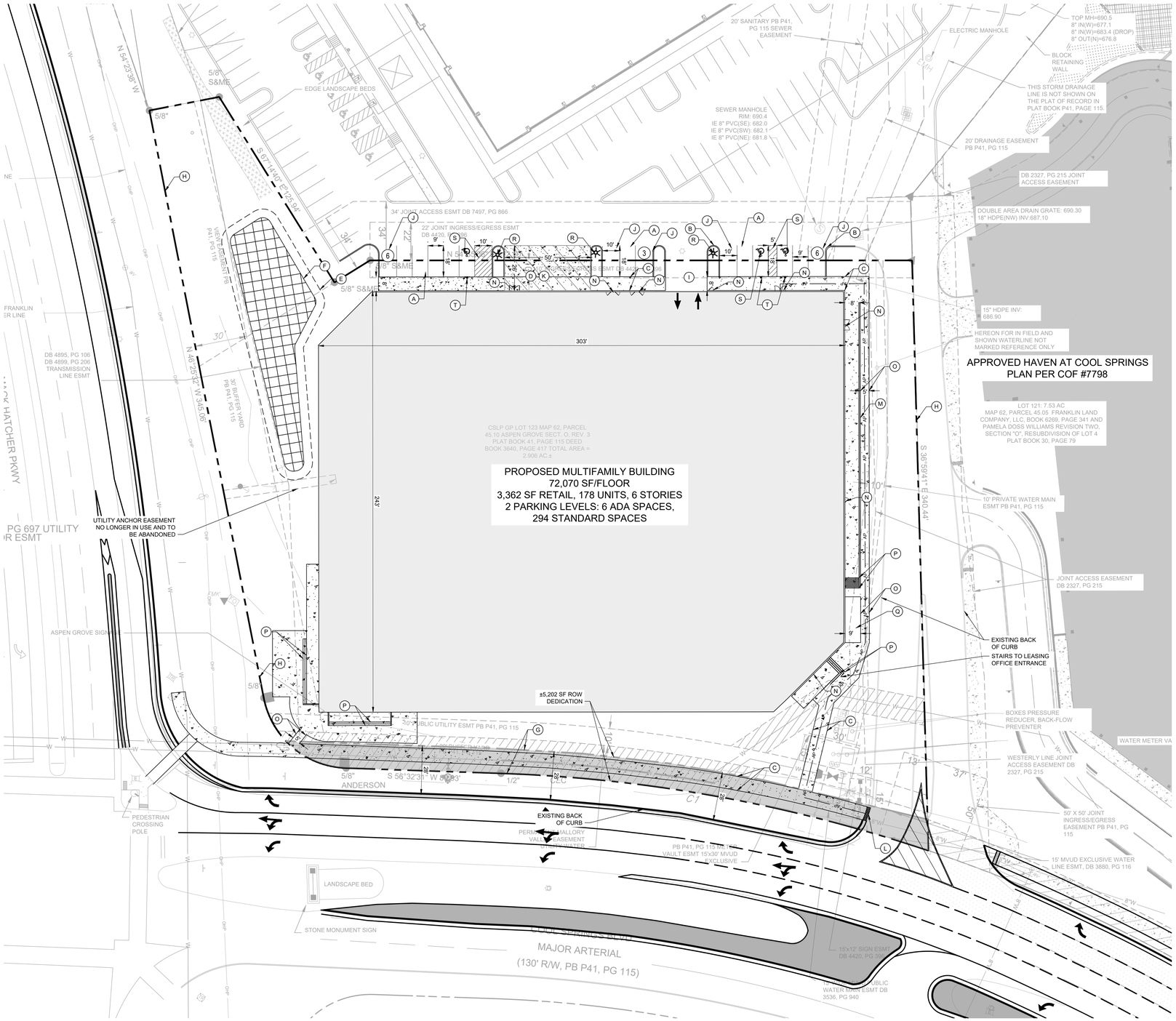
7.2 DEVELOPMENT IMPROVEMENT RECOMMENDATIONS

Based on the results of this traffic impact study, Kimley-Horn and Associates, Inc. recommends the following development improvements to serve the Projected 2025 Build traffic conditions (Note: this would be the improvements needed to serve the traffic associated with the *101 Cool Springs Boulevard* development).

- Intersection 1 – Mack Hatcher Parkway at Cool Springs Boulevard
  - Replace all existing traffic signal backplates with new retroreflective yellow backplates
  - Extend the existing concrete channelized island for the westbound right-turn movement to the north to provide barrier separation for the free-flow slip lane traveling west along Cool Springs Boulevard to north along Mack Hatcher Parkway
  - Extend the westbound left-turn lane to provide 735' of storage
- Intersection 2 – Cool Springs Boulevard at Site Driveway
  - With the extension of the westbound left-turn lane at the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), provide an additional turn lane pocket to provide 100' of storage for the westbound left-turn movement at Cool Springs Boulevard at Site Driveway (Intersection 2).
- Intersection 3 – Cool Springs Boulevard at Windcross Court
  - Extend the eastbound left-turn lane to provide 340' of storage
  - Note: A concept graphic illustrating the recommended improvements is provided in **Appendix A**.

APPENDIX A

Site Plan



SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
COF PROJECT #:	8157
MAP:	MAP #94062G
PARCEL #:	062---04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DEVELOPMENT STANDARD:	TRADITIONAL
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS: 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE 3
MAXIMUM BUILDING HEIGHT:	85' - 0" PER 2018 IBC
PROPOSED BUILDING HEIGHT:	84' - 0"
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
MINIMUM PARKING REQUIREMENT:	311 SPACES 1.5 SPACES PER 1 BEDROOM (134 UNITS) 2.5 SPACES PER 2 BEDROOM (44 UNITS)
EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:

1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
2. THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE CITY OF FRANKLIN STANDARDS AND THE APPROVAL OF PLANNING COMMISSION. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY EITHER RELEVANT DEPARTMENT SUPERINTENDENT OR THE PLANNING COMMISSION.
3. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FLIPZONE 4100 AND NAD 83 DATUM.
4. BASE INFORMATION HAS BEEN TAKEN FROM TWO ALTA SURVEYS PROVIDED BY CEC INC, PERFORMED BY MICHAEL K. STORY DATED 02-23-22 AND 9-14-22. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

SITE PLAN KEYNOTE LEGEND

- (A) 9' X 18' PROPOSED PARKING SPACE (TYP.)
- (B) 6" PROPOSED POST CURB (TYP.)
- (C) 8' SIDEWALK (TYP.)
- (D) REFUSE COLLECTION AREA
- (E) GREEN INFRASTRUCTURE EASEMENT (GIE)
- (F) BIORETENTION POND
- (G) DEDICATED ROW PER CONNECT FRANKLIN PLANS
- (H) EXISTING PROPERTY LINE
- (I) PARKING GARAGE ENTRANCE
- (J) 10'X18' PROPOSED END PARKING SPACE (TYP.)
- (K) DESIGNATED LOADING AREA
- (L) ADA CURB RAMP
- (M) MAX 8' RETAINING WALL
- (N) ENTRANCE/EXIT
- (O) 5' SIDEWALK (TYP.)
- (P) EXTERIOR STAIRS
- (Q) LANDSCAPE BED
- (R) RELOCATED LIGHT POLE
- (S) ADA PARKING STRIPING
- (T) ADA PARKING SIGNAGE

COMPREHENSIVE REVIEW AT SITE PLAN

COMPREHENSIVE REVIEW OF ROADWAY, STORMWATER, AND UTILITY ELEMENTS BY CITY OF FRANKLIN STAFF WILL OCCUR AT SITE PLAN. PROJECT ENTITLEMENTS APPROVED WITH THIS DEVELOPMENT PLAN DO NOT CONSTITUTE APPROVAL OF THE ROADWAY, STORMWATER, AND UTILITY ELEMENTS SHOWN ON THE DEVELOPMENT PLAN. IF, UPON APPLICATION OF CITY OF FRANKLIN STREET, STORMWATER, AND UTILITY STANDARDS AT SITE PLAN, THE APPLICANT CANNOT ACHIEVE THE MAXIMUM APPROVED ENTITLEMENTS, THE APPLICANT SHALL BE CONFINED TO THE ENTITLEMENTS ACHIEVABLE FROM THE APPLICATION OF SAID STANDARDS.

CROSS ACCESS NOTE

IN THE EVENT THAT 151 OR 201 COOL SPRINGS BOULEVARD DOES NOT MOVE FORWARD WITH CONSTRUCTION, THIS DEVELOPMENT SHALL INSTALL THE ACCESS ROAD AND ASSOCIATED STORMWATER TREATMENT AS PART OF THE SITE PLAN SUBMITTAL, TO PROVIDE A FULL ACCESS AT COOL SPRINGS BOULEVARD AND WINDCROSS COURT.

THE CONNECTION TO WINDCROSS MUST BE UNDER CONSTRUCTION PRIOR TO A BUILDING PERMIT FOR THIS SITE AND MUST BE COMPLETED AND ACCEPTED PRIOR TO THE FIRST CERTIFICATE OF OCCUPANCY.

OFFSITE IMPROVEMENTS NOTE

SEE OFFISTE ROADWAY IMPROVEMENTS EXHIBIT FOR DETAILS AND CALLOUTS PERTAINING TO OFFSITE IMPROVEMENTS.

GRAPHIC SCALE IN FEET
0 15 30 60

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION

FRANKLIN, TENNESSEE

RYAN McMASTER REGISTERED ENGINEER AND ARCHITECT COMMERCE No. 108058 STATE OF TENNESSEE 2023-05-04

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO. 118479000	

OVERALL SITE PLAN

SHEET NUMBER
C2.0

COF #8157

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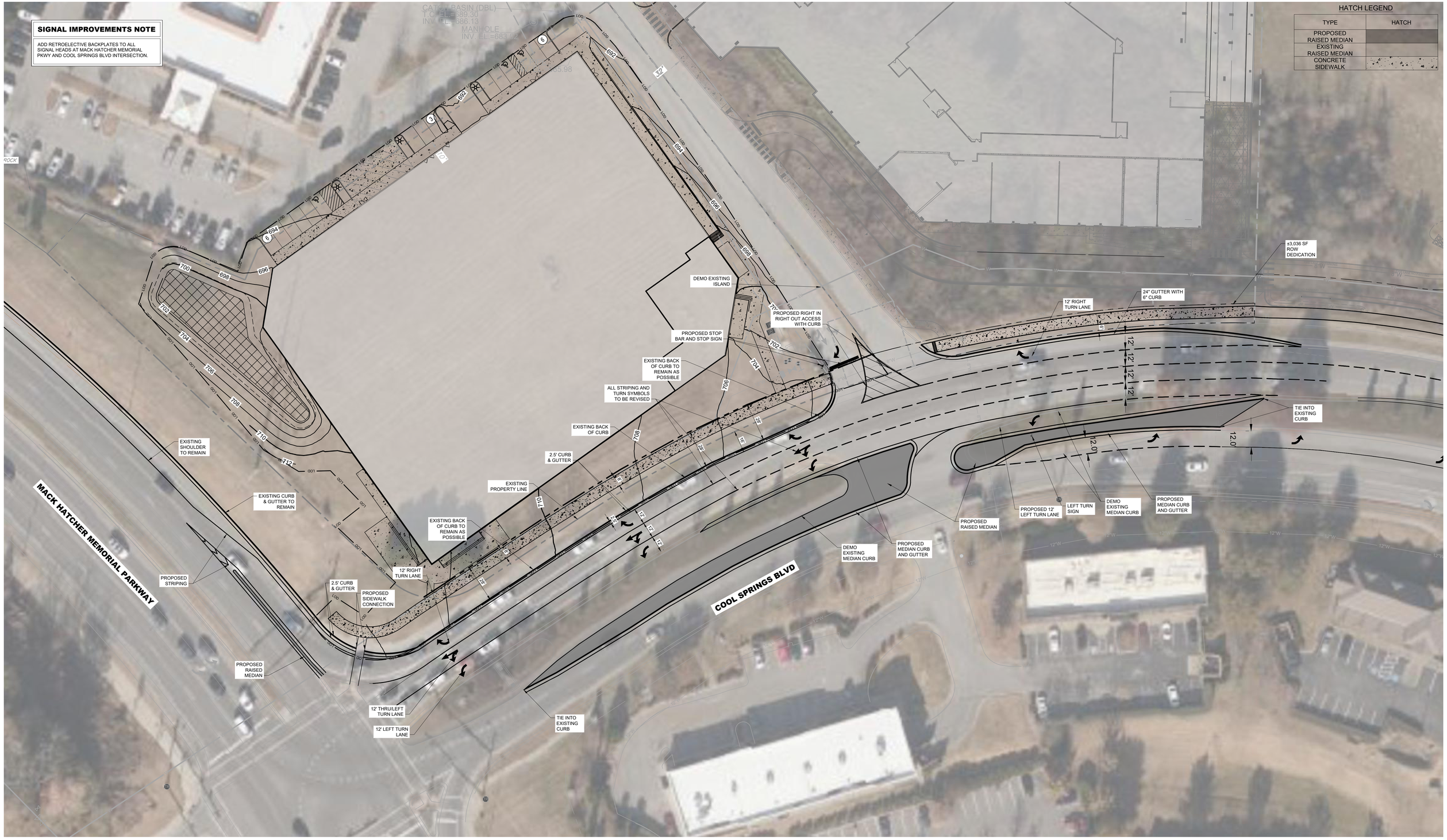
Drawing name: K:\FRA_LDEV\118479000 - Cool Springs Boulevard\4-CADD\PlanSheets\Development Plan\C2.0 OVERALL SITE PLAN.dwg C2.0 OVERALL SITE PLAN May 03, 2023 4:06pm by: Noah.Seethaler

SIGNAL IMPROVEMENTS NOTE

ADD RETROELECTIVE BACKPLATES TO ALL SIGNAL HEADS AT MACK HATCHER MEMORIAL PKWY AND COOL SPRINGS BLVD INTERSECTION.

HATCH LEGEND

TYPE	HATCH
PROPOSED RAISED MEDIAN	
EXISTING RAISED MEDIAN	
CONCRETE SIDEWALK	



Kimley»Horn

101 COOL SPRINGS BLVD

OFFSITE IMPROVEMENTS

May 3, 2023

0 15 30 60 90

NORTH

APPENDIX B

Traffic Count Data

Peak Hour Turning Movement Count

Franklin, TN

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, August 30, 2022	
Period	0700 - 0900
Peak Hour	0730 - 0830

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	122	117	1	240	207	128	0	0	335	0	0	0	0	0	33	0	195	0	228	803
0745 - 0800	0	120	120	0	240	238	135	0	0	373	0	0	0	0	0	47	0	169	0	216	829
0800 - 0815	0	133	104	0	237	243	105	0	0	348	0	0	0	0	0	45	0	174	0	219	804
0815 - 0830	0	96	129	1	226	233	112	0	0	345	0	0	0	0	0	29	0	157	0	186	757
Total	0	471	470	2	943	921	480	0	0	1401	0	0	0	0	0	154	0	695	0	849	3193
Approach %	0.00	49.95	49.84	0.21	-	65.74	34.26	0.00	0.00	-	0.00	0.00	0.00	0.00	-	18.14	0.00	81.86	0.00	-	
PHF	0.00	0.89	0.91	0.50	**0.98**	0.95	0.89	0.00	0.00	**0.94**	0.00	0.00	0.00	0.00	**0.00**	0.82	0.00	0.89	0.00	**0.93**	**0.96**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0815 - 0830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	111	117	1	229	202	127	0	0	329	0	0	0	0	0	30	0	194	0	224	782
0745 - 0800	0	116	120	0	236	236	131	0	0	367	0	0	0	0	0	43	0	162	0	205	808
0800 - 0815	0	128	102	0	230	240	105	0	0	345	0	0	0	0	0	44	0	167	0	211	786
0815 - 0830	0	91	126	1	218	228	108	0	0	336	0	0	0	0	0	26	0	150	0	176	730
Total	0	446	465	2	913	906	471	0	0	1377	0	0	0	0	0	143	0	673	0	816	3106
Approach %	0.00	48.85	50.93	0.22	-	65.80	34.20	0.00	0.00	-	0.00	0.00	0.00	0.00	-	17.52	0.00	82.48	0.00	-	
PHF	0.00	0.87	0.92	0.50	**0.97**	0.94	0.90	0.00	0.00	**0.94**	0.00	0.00	0.00	0.00	**0.00**	0.81	0.00	0.87	0.00	**0.91**	**0.96**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	6	0	0	6	5	1	0	0	6	0	0	0	0	0	3	0	1	0	4	16
0745 - 0800	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	4	0	6	0	10	15
0800 - 0815	0	4	1	0	5	3	0	0	0	3	0	0	0	0	0	1	0	4	0	5	13
0815 - 0830	0	4	3	0	7	4	4	0	0	8	0	0	0	0	0	2	0	6	0	8	23
Total	0	16	4	0	20	12	8	0	0	20	0	0	0	0	0	10	0	17	0	27	67
Approach %	0.00	80.00	20.00	0.00	-	60.00	40.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	37.04	0.00	62.96	0.00	-	
PHF	0.00	0.67	0.33	0.00	**0.71**	0.60	0.50	0.00	0.00	**0.63**	0.00	0.00	0.00	0.00	**0.00**	0.63	0.00	0.71	0.00	**0.68**	**0.73**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
0745 - 0800	0	2	0	0	2	2	1	0	0	3	0	0	0	0	0	0	0	1	0	1	6
0800 - 0815	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5
0815 - 0830	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	1	0	1	0	2	4
Total	0	9	1	0	10	3	1	0	0	4	0	0	0	0	0	1	0	5	0	6	20
Approach %	0.00	90.00	10.00	0.00	-	75.00	25.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	16.67	0.00	83.33	0.00	-	
PHF	0.00	0.45	0.25	0.00	**0.50**	0.38	0.25	0.00	0.00	**0.33**	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.42	0.00	**0.50**	**0.83**

Peak Hour Turning Movement Count

Franklin, TN

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, August 30, 2022	
Period	1600 - 1800
Peak Hour	1645 - 1745

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	130	80	0	210	177	118	0	0	295	0	0	0	0	0	104	0	280	0	384	889
1700 - 1715	0	127	90	0	217	173	110	0	1	284	0	0	0	0	0	123	0	267	1	391	892
1715 - 1730	0	123	85	1	209	191	111	0	0	302	0	0	0	0	0	139	0	316	0	455	966
1730 - 1745	0	132	88	0	220	194	143	0	0	337	0	0	0	0	0	89	0	241	1	331	888
Total	0	512	343	1	856	735	482	0	1	1218	0	0	0	0	0	455	0	1104	2	1561	3635
Approach %	0.00	59.81	40.07	0.12	-	60.34	39.57	0.00	0.08	-	0.00	0.00	0.00	0.00	-	29.15	0.00	70.72	0.13	-	
PHF	0.00	0.97	0.95	0.25	**0.97**	0.95	0.84	0.00	0.25	**0.90**	0.00	0.00	0.00	0.00	**0.00**	0.82	0.00	0.87	0.50	**0.86**	**0.94**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1730 - 1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	127	77	0	204	173	113	0	0	286	0	0	0	0	0	101	0	279	0	380	870
1700 - 1715	0	125	90	0	215	171	109	0	1	281	0	0	0	0	0	121	0	266	1	388	884
1715 - 1730	0	122	83	1	206	189	110	0	0	299	0	0	0	0	0	135	0	313	0	448	953
1730 - 1745	0	132	87	0	219	192	138	0	0	330	0	0	0	0	0	89	0	240	1	330	879
Total	0	506	337	1	844	725	470	0	1	1196	0	0	0	0	0	446	0	1098	2	1546	3586
Approach %	0.00	59.95	39.93	0.12	-	60.62	39.30	0.00	0.08	-	0.00	0.00	0.00	0.00	-	28.85	0.00	71.02	0.13	-	
PHF	0.00	0.96	0.94	0.25	**0.96**	0.94	0.85	0.00	0.25	**0.91**	0.00	0.00	0.00	0.00	**0.00**	0.83	0.00	0.88	0.50	**0.86**	**0.94**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	2	3	0	5	4	5	0	0	9	0	0	0	0	0	3	0	1	0	4	18
1700 - 1715	0	1	0	0	1	2	1	0	0	3	0	0	0	0	0	1	0	1	0	2	6
1715 - 1730	0	1	2	0	3	2	1	0	0	3	0	0	0	0	0	3	0	3	0	6	12
1730 - 1745	0	0	1	0	1	2	2	0	0	4	0	0	0	0	0	0	0	1	0	1	6
Total	0	4	6	0	10	10	9	0	0	19	0	0	0	0	0	7	0	6	0	13	42
Approach %	0.00	40.00	60.00	0.00	-	52.63	47.37	0.00	0.00	-	0.00	0.00	0.00	0.00	-	53.85	0.00	46.15	0.00	-	
PHF	0.00	0.50	0.50	0.00	**0.50**	0.63	0.45	0.00	0.00	**0.53**	0.00	0.00	0.00	0.00	**0.00**	0.58	0.00	0.50	0.00	**0.54**	**0.58**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1700 - 1715	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
1715 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
1730 - 1745	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Total	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	2	0	0	0	2	7
Approach %	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.50	0.00	0.00	**0.50**	0.00	0.25	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	**0.00**	0.50	0.00	0.00	0.00	**0.50**	**0.58**

APPENDIX C

Volume Development

Trip Generation - 101 Cool Springs Boulevard

ITE Code	Land Use	Setting/Location	Density		Daily	AM Peak Hour			PM Peak Hour		
						Total	Enter	Exit	Total	Enter	Exit
220	Multifamily Housing (Low-Rise)	General Urban/Suburban	178	d.u.	1,216	78	19	59	97	61	36
822	Strip Retail Plaza (<40ksf) (Proposed)	General Urban/Suburban	3,500	s.f.	378	14	8	6	37	19	18
GROSS TRIPS					**1,594**	**92**	**27**	**65**	**134**	**80**	**54**
Gross Trips - Before Reductions					1,594	92	27	65	134	80	54
Residential					1,216	78	19	59	97	61	36
Retail					378	14	8	6	37	19	18
Reduction - Internal Capture					-38	0	0	0	-4	-2	-2
Retail					-38				-4	-2	-2
NEW TRIPS					**1,556**	**92**	**27**	**65**	**130**	**78**	**52**

INTERSECTION VOLUME WORKSHEET

INTERSECTION 1

Mack Hatcher Memorial Parkway at Cool Springs Boulevard

AM PEAK HOUR

	Driveway Eastbound				Cool Springs Boulevard Westbound				Mack Hatcher Memorial Parkway Northbound				Mack Hatcher Memorial Parkway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: KH Collected Count 8/30/2022)																	
Existing 2022 AM Volumes		**0**	**0**	**0**		**154**	**0**	**695**	**2**	**0**	**471**	**470**		**921**	**480**	**0**	**3193**
Existing Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Conflicting Pedestrians		1		0		0		1		0		1		1		0	
Heavy Vehicles						11		22				5		15	9		
Heavy Vehicle %	2	2	2	2	2	7	2	3	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	9	0	42	0	0	29	29	0	56	29	0	194
RIRO Driveway Adjustment					4												
CSTS Model Trip Distribution IN (EB)												*30%*		*70%*			
CSTS Model Trip Distribution OUT (WB)						*30%*		*70%*									
CSTS Model Trips (w/o Zone 12)						65		151				92		214			522
151/201 CSB Trip Distribution IN												*25%*		*20%*			0.45
151/201 CSB Trip Distribution OUT						*25%*		*20%*									0.45
151/201 CSB Trips	0	0	0	0	0	34	0	27	0	0	0	44	0	35	0	0	140
Optima Trips						14		20				10		15			
No-Build 2025 AM Volumes	**0**	**0**	**0**	**0**	**4**	**276**	**0**	**935**	**2**	**0**	**500**	**645**	**0**	**1241**	**509**	**0**	**4112**
Project Traffic																	
Trip Distribution IN												15%		15%			
Trip Distribution OUT						15%		15%									
Project Trips	0	0	0	0	0	10	0	10	0	0	0	4	0	4	0	0	28
Build 2025 AM Volumes	**0**	**0**	**0**	**0**	**4**	**286**	**0**	**945**	**2**	**0**	**500**	**649**	**0**	**1245**	**509**	**0**	**4140**
% from Existing	0.0%	0.0%	0.0%	0.0%	0.0%	53.8%	0.0%	73.5%	100.0%	0.0%	94.2%	72.4%	0.0%	74.0%	94.3%	0.0%	77.1%
% from Background Growth	0.0%	0.0%	0.0%	0.0%	100.0%	42.7%	0.0%	25.4%	0.0%	0.0%	5.8%	27.0%	0.0%	25.7%	5.7%	0.0%	22.2%
% from Project Trips	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	0.0%	1.1%	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%	0.0%	0.0%	0.7%

PM PEAK HOUR

	Driveway Eastbound				Cool Springs Boulevard Westbound				Mack Hatcher Memorial Parkway Northbound				Mack Hatcher Memorial Parkway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2022 AM Volumes		**0**	**0**	**0**	**2**	**455**	**0**	**1104**	**1**	**0**	**512**	**343**	**1**	**735**	**482**	**0**	**3635**
Existing Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Conflicting Pedestrians																	
Heavy Vehicles						9		6			6	6		10	12		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	28	0	67	0	0	31	21	0	45	29	0	221
New Road Adjustment					42												
CSTS Model Trip Distribution IN (EB)												*30%*		*70%*			
CSTS Model Trip Distribution OUT (WB)						*30%*		*70%*									
CSTS Model Trips (w/o Zone 12)						138		323				97		226			784
151/201 CSB Trip Distribution IN												*25%*		*20%*			0.45
151/201 CSB Trip Distribution OUT						*25%*		*20%*									0.45
151/201 CSB Trips	0	0	0	0	0	55	0	44	0	0	0	40	0	32	0	0	171
Optima Trips						13		19				15		23			
No-Build 2025 PM Volumes	**0**	**0**	**0**	**0**	**44**	**689**	**0**	**1557**	**1**	**0**	**543**	**516**	**1**	**1061**	**511**	**0**	**4923**
Project Traffic																	
Trip Distribution IN												15%		15%			
Trip Distribution OUT						15%		15%									
Project Trips	0	0	0	0	0	8	0	8	0	0	0	12	0	12	0	0	40
Build 2025 PM Volumes	**0**	**0**	**0**	**0**	**44**	**697**	**0**	**1565**	**1**	**0**	**543**	**528**	**1**	**1073**	**511**	**0**	**4963**
% from Existing	0.0%	0.0%	0.0%	0.0%	4.5%	65.3%	0.0%	70.5%	100.0%	0.0%	94.3%	65.0%	100.0%	68.5%	94.3%	0.0%	73.2%
% from Background Growth	0.0%	0.0%	0.0%	0.0%	95.5%	33.6%	0.0%	28.9%	0.0%	0.0%	5.7%	32.8%	0.0%	30.4%	5.7%	0.0%	26.0%
% from Project Trips	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.5%	0.0%	0.0%	0.0%	2.3%	0.0%	1.1%	0.0%	0.0%	0.8%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 2

Cool Spring Boulevard at Coldwell Bankers Driveway/Aspen Grove Medical Driveway

AM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				Coldwell Bankers Driveway Northbound				Aspen Grove Medical Driveway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Commercial Driveway Volumes In/Out from 201 CSB Joint TIS, CSB through volumes balanced with Int 1)																	
Existing 2023 AM Volumes		**27**	**1358**	**6**		**15**	**845**	**38**		**1**	**0**	**5**		**4**	**0**	**3**	**2302**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1	1.04	1	1.04	1	1.04	1	1	1	1	1	1	1	1	1	
Growth Trips	0	0	54	0	0	0	34	0	0	0	0	0	0	0	0	0	88
RIRO Driveway Adjustment		-27	31				1			-1		1		-4		4	
CSTS Model Trips (w/o Zone 12)			306				216										522
151/201 CSB Trip Distribution IN			*45%*					*40%*								*35%*	1.2
151/201 CSB Trip Distribution OUT							*10%*										0.1
151/201 CSB Trips	0	0	78	0	0	0	13	70	0	0	0	0	0	0	0	61	222
Optima Trips			26				34										
No-Build 2025 AM Volumes	**0**	**0**	**1853**	**6**	**0**	**15**	**1143**	**108**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**68**	**3199**
Project Traffic																	
Trip Distribution IN			30%					70%									
Trip Distribution OUT																30%	
Project Trips	0	0	8	0	0	0	0	19	0	0	0	0	0	0	0	20	47
Build 2025 AM Volumes	**0**	**0**	**1861**	**6**	**0**	**15**	**1143**	**127**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**88**	**3246**
% from Existing	0.0%	0.0%	73.0%	100.0%	0.0%	100.0%	73.9%	29.9%	0.0%	0.0%	0.0%	83.3%	0.0%	0.0%	0.0%	3.4%	70.9%
% from Background Growth	0.0%	0.0%	26.6%	0.0%	0.0%	0.0%	26.1%	55.1%	0.0%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	73.9%	27.6%
% from Project Trips	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	15.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.7%	1.4%

PM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				Coldwell Bankers Driveway Northbound				Aspen Grove Medical Driveway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes		**2**	**1070**	**6**		**11**	**1532**	**7**		**9**	**0**	**12**		**42**	**0**	**18**	**2709**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1	1.04	1	1.04	1	1.04	1	1	1	1	1	1	1	1	1	
Growth Trips	0	0	43	0	0	0	61	0	0	0	0	0	0	0	0	0	104
New Road Adjustment		-2	44				9			-9		9		-42		42	
CSTS Model Trips (w/o Zone 12)			323				461										784
151/201 CSB Trip Distribution IN			*45%*					*40%*								*35%*	1.2
151/201 CSB Trip Distribution OUT							*10%*										0.1
151/201 CSB Trips	0	0	72	0	0	0	22	64	0	0	0	0	0	0	0	56	214
Optima Trips			39				32										
No-Build 2025 PM Volumes	**0**	**0**	**1591**	**6**	**0**	**11**	**2117**	**71**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**116**	**3933**
Project Traffic																	
Trip Distribution IN			30%					70%									
Trip Distribution OUT																30%	
Project Trips	0	0	23	0	0	0	0	55	0	0	0	0	0	0	0	16	94
Build 2025 PM Volumes	**0**	**0**	**1614**	**6**	**0**	**11**	**2117**	**126**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**132**	**4027**
% from Existing	0.0%	0.0%	66.3%	100.0%	0.0%	100.0%	72.4%	5.6%	0.0%	0.0%	0.0%	57.1%	0.0%	0.0%	0.0%	13.6%	67.3%
% from Background Growth	0.0%	0.0%	32.3%	0.0%	0.0%	0.0%	27.6%	50.8%	0.0%	0.0%	0.0%	42.9%	0.0%	0.0%	0.0%	74.2%	30.4%
% from Project Trips	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	43.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.1%	2.3%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 3

Cool Springs Boulevard at Windcross Court

AM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Windcross Court **Northbound**				Windcross Court Extension **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Existing 2020 Vistro Counts, Balanced through volumes with Int 2)																	
Existing 2023 AM Volumes			**1279**	**88**		**196**	**873**	**0**		**25**	**0**	**96**					**2557**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1	1	1	1	1	1	1	1	
Growth Trips	0	0	51	4	0	8	35	0	0	0	0	0	0	0	0	0	98
RIRO Driveway Adjustment	1	31															
CSTS Model Trips (w/o Zone 12)			306				216										522
151/201 CSB Trip Distribution IN		*45%*					*40%*	*15%*									1
151/201 CSB Trip Distribution OUT														*55%*		*10%*	0.65
151/201 CSB Trips	0	78	0	0	0	0	70	26	0	0	0	0	0	74	0	13	261
Optima Trips			26				34										
No-Build 2025 AM Volumes	**1**	**109**	**1662**	**92**	**0**	**204**	**1228**	**26**	**0**	**25**	**0**	**96**	**0**	**74**	**0**	**13**	**3530**
Project Traffic																	
Trip Distribution IN		30%					70%										
Trip Distribution OUT														70%			
Project Trips	0	8	0	0	0	0	19	0	0	0	0	0	0	46	0	0	73
Build 2025 AM Volumes	**1**	**117**	**1662**	**92**	**0**	**204**	**1247**	**26**	**0**	**25**	**0**	**96**	**0**	**120**	**0**	**13**	**3603**
% from Existing	0.0%	0.0%	77.0%	95.7%	0.0%	96.1%	70.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	71.0%
% from Background Growth	100.0%	93.2%	23.0%	4.3%	0.0%	3.9%	28.5%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.7%	0.0%	100.0%	27.0%
% from Project Trips	0.0%	6.8%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.3%	0.0%	0.0%	2.0%

PM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Windcross Court **Northbound**				Windcross Court Extension **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes			**1106**	**18**		**127**	**1488**			**62**		**268**					**3069**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1	1	1	1	1	1	1	1	
Growth Trips	0	0	44	1	0	5	60	0	0	0	0	0	0	0	0	0	110
New Road Adjustment	9	44															
CSTS Model Trips (w/o Zone 12)			323				461										784
151/201 CSB Trip Distribution IN		*45%*					*40%*	*15%*									1
151/201 CSB Trip Distribution OUT														*55%*		*10%*	0.65
151/201 CSB Trips	0	72	0	0	0	0	64	24	0	0	0	0	0	122	0	22	304
Optima Trips			39				32										
No-Build 2025 PM Volumes	**9**	**116**	**1512**	**19**	**0**	**132**	**2105**	**24**	**0**	**62**	**0**	**268**	**0**	**122**	**0**	**22**	**4391**
Project Traffic																	
Trip Distribution IN		30%					70%										
Trip Distribution OUT														70%			
Project Trips	0	23	0	0	0	0	55	0	0	0	0	0	0	36	0	0	114
Build 2025 PM Volumes	**9**	**139**	**1512**	**19**	**0**	**132**	**2160**	**24**	**0**	**62**	**0**	**268**	**0**	**158**	**0**	**22**	**4505**
% from Existing	0.0%	0.0%	73.1%	94.7%	0.0%	96.2%	68.9%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	68.1%
% from Background Growth	100.0%	83.5%	26.9%	5.3%	0.0%	3.8%	28.6%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	77.2%	0.0%	100.0%	29.3%
% from Project Trips	0.0%	16.5%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.8%	0.0%	0.0%	2.5%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 4

Cool Springs Boulevard at McEwen Drive

AM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				McEwen Drive Northbound				- Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Existing 2020 Vistro Counts, Balanced volumes with Int 3 with through/turn split %s from Magnetometer Data*)																	
Existing 2023 AM Volumes			**874**	**501**		**93**	**750**			**319**		**223**					**2760**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1	1	1	1	
Growth Trips	0	0	35	20	0	4	30	0	0	13	0	9	0	0	0	0	111
RIRO Driveway Adjustment																	
CSTS Model Trips (w/o Zone 12)			55	251		0	61			155		0					522
151/201 CSB Trip Distribution IN							*30%*			*25%*							0.55
151/201 CSB Trip Distribution OUT			*30%*	*25%*													0.55
151/201 CSB Trips	0	0	40	34	0	0	52	0	0	44	0	0	0	0	0	0	170
Optima Trips		26	-1	0		0	-1	43		0	34	0		58	45	35	
No-Build 2025 AM Volumes	**0**	**26**	**1003**	**806**	**0**	**97**	**892**	**43**	**0**	**531**	**34**	**232**	**0**	**58**	**45**	**35**	**3802**
Project Traffic																	
Trip Distribution IN							50%			20%							
Trip Distribution OUT			50%	20%													
Project Trips	0	0	33	13	0	0	14	0	0	5	0	0	0	0	0	0	65
Build 2025 AM Volumes	**0**	**26**	**1036**	**819**	**0**	**97**	**906**	**43**	**0**	**536**	**34**	**232**	**0**	**58**	**45**	**35**	**3867**
% from Existing	0.0%	0.0%	84.4%	61.2%	0.0%	95.9%	82.8%	0.0%	0.0%	59.5%	0.0%	96.1%	0.0%	0.0%	0.0%	0.0%	71.4%
% from Background Growth	0.0%	100.0%	12.5%	37.2%	0.0%	4.1%	15.7%	100.0%	0.0%	39.6%	100.0%	3.9%	0.0%	100.0%	100.0%	100.0%	26.9%
% from Project Trips	0.0%	0.0%	3.2%	1.6%	0.0%	0.0%	1.5%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%

PM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				McEwen Drive Northbound				- Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes			**971**	**403**		**260**	**1097**			**518**		**179**					**3428**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1	1	1	1	
Growth Trips	0	0	39	16	0	10	44	0	0	21	0	7	0	0	0	0	137
New Road Adjustment																	
CSTS Model Trips (w/o Zone 12)			55	268		0	61			400		0					784
151/201 CSB Trip Distribution IN							*30%*			*25%*							0.55
151/201 CSB Trip Distribution OUT			*30%*	*25%*													0.55
151/201 CSB Trips	0	0	66	55	0	0	48	0	0	40	0	0	0	0	0	0	209
Optima Trips		39	-7	-3		-2	-7	65		-3	51	-1		62	47	42	
No-Build 2025 PM Volumes	**0**	**39**	**1124**	**739**	**0**	**268**	**1243**	**65**	**0**	**976**	**51**	**185**	**0**	**62**	**47**	**42**	**4841**
Project Traffic																	
Trip Distribution IN							50%			20%							
Trip Distribution OUT			50%	20%													
Project Trips	0	0	26	10	0	0	39	0	0	16	0	0	0	0	0	0	91
Build 2025 PM Volumes	**0**	**39**	**1150**	**749**	**0**	**268**	**1282**	**65**	**0**	**992**	**51**	**185**	**0**	**62**	**47**	**42**	**4932**
% from Existing	0.0%	0.0%	84.4%	53.8%	0.0%	97.0%	85.6%	0.0%	0.0%	52.2%	0.0%	96.8%	0.0%	0.0%	0.0%	0.0%	69.5%
% from Background Growth	0.0%	100.0%	13.3%	44.9%	0.0%	3.0%	11.4%	100.0%	0.0%	46.2%	100.0%	3.2%	0.0%	100.0%	100.0%	100.0%	28.6%
% from Project Trips	0.0%	0.0%	2.3%	1.3%	0.0%	0.0%	3.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%

**Note: Existing EB traffic balanced from Int 3 was split 65%-EBT/35%-EBR. Existing WB traffic balanced from Int 3 was split 65%-WBT/35%-NBL*

INTERSECTION VOLUME WORKSHEET

INTERSECTION 1

Mack Hatcher Memorial Parkway at Cool Springs Boulevard

AM PEAK HOUR

	Driveway Eastbound				Cool Springs Boulevard Westbound				Mack Hatcher Memorial Parkway Northbound				Mack Hatcher Memorial Parkway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: KH Collected Count 8/30/2022)																	
Existing 2022 AM Volumes		**0**	**0**	**0**		**154**	**0**	**695**	**2**	**0**	**471**	**470**		**921**	**480**	**0**	**3193**
Existing Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Conflicting Pedestrians		1		0		0		1		0		1		1		0	
Heavy Vehicles						11		22				5		15	9		
Heavy Vehicle %	2	2	2	2	2	7	2	3	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	
Growth Trips	0	0	0	0	0	26	0	120	0	0	81	81	0	158	83	0	549
RIRO Driveway Adjustment					4												
CSTS Model Trip Distribution IN (EB)												*30%*		*70%*			
CSTS Model Trip Distribution OUT (WB)						*30%*		*70%*									
CSTS Model Trips (w/o Zone 12)						65		151				92		214			522
151/201 CSB Trip Distribution IN												*25%*		*20%*			0.45
151/201 CSB Trip Distribution OUT						*25%*		*20%*									0.45
151/201 CSB Trips	0	0	0	0	0	34	0	27	0	0	0	44	0	35	0	0	140
Optima Trips						14		20				10		15			
No-Build 2030 AM Volumes	**0**	**0**	**0**	**0**	**4**	**293**	**0**	**1013**	**2**	**0**	**552**	**697**	**0**	**1343**	**563**	**0**	**4467**
Project Traffic																	
Trip Distribution IN												15%		15%			
Trip Distribution OUT						15%		15%									
Project Trips	0	0	0	0	0	10	0	10	0	0	0	4	0	4	0	0	28
Build 2030 AM Volumes	**0**	**0**	**0**	**0**	**4**	**303**	**0**	**1023**	**2**	**0**	**552**	**701**	**0**	**1347**	**563**	**0**	**4495**
% from Existing	0.0%	0.0%	0.0%	0.0%	0.0%	50.8%	0.0%	67.9%	100.0%	0.0%	85.3%	67.0%	0.0%	68.4%	85.3%	0.0%	71.0%
% from Background Growth	0.0%	0.0%	0.0%	0.0%	100.0%	45.9%	0.0%	31.1%	0.0%	0.0%	14.7%	32.4%	0.0%	31.3%	14.7%	0.0%	28.3%
% from Project Trips	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%	0.0%	1.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%	0.0%	0.0%	0.6%

PM PEAK HOUR

	Driveway Eastbound				Cool Springs Boulevard Westbound				Mack Hatcher Memorial Parkway Northbound				Mack Hatcher Memorial Parkway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2022 AM Volumes		**0**	**0**	**0**	**2**	**455**	**0**	**1104**	**1**	**0**	**512**	**343**	**1**	**735**	**482**	**0**	**3635**
Existing Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Conflicting Pedestrians																	
Heavy Vehicles						9		6			6	6		10	12		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	
Growth Trips	0	0	0	0	0	78	0	190	0	0	88	59	0	126	83	0	624
New Road Adjustment					42												
CSTS Model Trip Distribution IN (EB)												*30%*		*70%*			
CSTS Model Trip Distribution OUT (WB)						*30%*		*70%*									
CSTS Model Trips (w/o Zone 12)						138		323				97		226			784
151/201 CSB Trip Distribution IN												*25%*		*20%*			0.45
151/201 CSB Trip Distribution OUT						*25%*		*20%*									0.45
151/201 CSB Trips	0	0	0	0	0	55	0	44	0	0	0	40	0	32	0	0	171
Optima Trips						13		19				15		23			
No-Build 2030 PM Volumes	**0**	**0**	**0**	**0**	**44**	**739**	**0**	**1680**	**1**	**0**	**600**	**554**	**1**	**1142**	**565**	**0**	**5326**
Project Traffic																	
Trip Distribution IN												15%		15%			
Trip Distribution OUT						15%		15%									
Project Trips	0	0	0	0	0	8	0	8	0	0	0	12	0	12	0	0	40
Build 2030 PM Volumes	**0**	**0**	**0**	**0**	**44**	**747**	**0**	**1688**	**1**	**0**	**600**	**566**	**1**	**1154**	**565**	**0**	**5366**
% from Existing	0.0%	0.0%	0.0%	0.0%	4.5%	60.9%	0.0%	65.4%	100.0%	0.0%	85.3%	60.6%	100.0%	63.7%	85.3%	0.0%	67.7%
% from Background Growth	0.0%	0.0%	0.0%	0.0%	95.5%	38.0%	0.0%	34.1%	0.0%	0.0%	14.7%	37.3%	0.0%	35.3%	14.7%	0.0%	31.5%
% from Project Trips	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.5%	0.0%	0.0%	0.0%	2.1%	0.0%	1.0%	0.0%	0.0%	0.7%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 2

Cool Spring Boulevard at Coldwell Bankers Driveway/Aspen Grove Medical Driveway

AM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Coldwell Bankers Driveway **Northbound**				Aspen Grove Medical Driveway **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Commercial Driveway Volumes In/Out from 201 CSB Joint TIS, CSB through volumes balanced with Int 1)																	
Existing 2023 AM Volumes		**27**	**1358**	**6**		**15**	**845**	**38**		**1**	**0**	**5**		**4**	**0**	**3**	**2302**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1	1.149	1	1.149	1	1.149	1	1	1	1	1	1	1	1	1	
Growth Trips	0	0	202	0	0	0	126	0	0	0	0	0	0	0	0	0	328
RIRO Driveway Adjustment		-27	31				1			-1		1		-4		4	
CSTS Model Trips (w/o Zone 12)			306				216										522
151/201 CSB Trip Distribution IN			*45%*					*40%*								*35%*	1.2
151/201 CSB Trip Distribution OUT							*10%*										0.1
151/201 CSB Trips	0	0	78	0	0	0	13	70	0	0	0	0	0	0	0	61	222
Optima Trips			26				34										
No-Build 2030 AM Volumes	**0**	**0**	**2001**	**6**	**0**	**15**	**1235**	**108**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**68**	**3439**
Project Traffic																	
Trip Distribution IN			30%					70%									
Trip Distribution OUT																30%	
Project Trips	0	0	8	0	0	0	0	19	0	0	0	0	0	0	0	20	47
Build 2030 AM Volumes	**0**	**0**	**2009**	**6**	**0**	**15**	**1235**	**127**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**88**	**3486**
% from Existing	0.0%	0.0%	67.6%	100.0%	0.0%	100.0%	68.4%	29.9%	0.0%	0.0%	0.0%	83.3%	0.0%	0.0%	0.0%	3.4%	66.0%
% from Background Growth	0.0%	0.0%	32.0%	0.0%	0.0%	0.0%	31.6%	55.1%	0.0%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	73.9%	32.6%
% from Project Trips	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	15.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.7%	1.3%

PM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Coldwell Bankers Driveway **Northbound**				Aspen Grove Medical Driveway **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes		**2**	**1070**	**6**		**11**	**1532**	**7**		**9**	**0**	**12**		**42**	**0**	**18**	**2709**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1	1.149	1	1.149	1	1.149	1	1	1	1	1	1	1	1	1	
Growth Trips	0	0	159	0	0	0	228	0	0	0	0	0	0	0	0	0	387
New Road Adjustment		-2	44				9			-9		9		-42		42	
CSTS Model Trips (w/o Zone 12)			323				461										784
151/201 CSB Trip Distribution IN			*45%*					*40%*								*35%*	1.2
151/201 CSB Trip Distribution OUT							*10%*										0.1
151/201 CSB Trips	0	0	72	0	0	0	22	64	0	0	0	0	0	0	0	56	214
Optima Trips			39				32										
No-Build 2030 PM Volumes	**0**	**0**	**1707**	**6**	**0**	**11**	**2284**	**71**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**116**	**4216**
Project Traffic																	
Trip Distribution IN			30%					70%									
Trip Distribution OUT																30%	
Project Trips	0	0	23	0	0	0	0	55	0	0	0	0	0	0	0	16	94
Build 2030 PM Volumes	**0**	**0**	**1730**	**6**	**0**	**11**	**2284**	**126**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**132**	**4310**
% from Existing	0.0%	0.0%	61.8%	100.0%	0.0%	100.0%	67.1%	5.6%	0.0%	0.0%	0.0%	57.1%	0.0%	0.0%	0.0%	13.6%	62.9%
% from Background Growth	0.0%	0.0%	36.8%	0.0%	0.0%	0.0%	32.9%	50.8%	0.0%	0.0%	0.0%	42.9%	0.0%	0.0%	0.0%	74.2%	35.0%
% from Project Trips	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	43.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.1%	2.2%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 3

Cool Springs Boulevard at Windcross Court

AM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Windcross Court **Northbound**				Windcross Court Extension **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Existing 2020 Vistro Counts, Balanced through volumes with Int 2)																	
Existing 2023 AM Volumes			**1279**	**88**		**196**	**873**	**0**		**25**	**0**	**96**					**2557**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1	1	1	1	1	1	1	1	
Growth Trips	0	0	191	13	0	29	130	0	0	0	0	0	0	0	0	0	363
RIRO Driveway Adjustment	1	31															
CSTS Model Trips (w/o Zone 12)			306				216										522
151/201 CSB Trip Distribution IN		*45%*					*40%*	*15%*									1
151/201 CSB Trip Distribution OUT														*55%*		*10%*	0.65
151/201 CSB Trips	0	78	0	0	0	0	70	26	0	0	0	0	0	74	0	13	261
Optima Trips			26				34										
No-Build 2030 AM Volumes	**1**	**109**	**1802**	**101**	**0**	**225**	**1323**	**26**	**0**	**25**	**0**	**96**	**0**	**74**	**0**	**13**	**3795**
Project Traffic																	
Trip Distribution IN		30%					70%										
Trip Distribution OUT														70%			
Project Trips	0	8	0	0	0	0	19	0	0	0	0	0	0	46	0	0	73
Build 2030 AM Volumes	**1**	**117**	**1802**	**101**	**0**	**225**	**1342**	**26**	**0**	**25**	**0**	**96**	**0**	**120**	**0**	**13**	**3868**
% from Existing	0.0%	0.0%	71.0%	87.1%	0.0%	87.1%	65.1%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	66.1%
% from Background Growth	100.0%	93.2%	29.0%	12.9%	0.0%	12.9%	33.5%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.7%	0.0%	100.0%	32.0%
% from Project Trips	0.0%	6.8%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.3%	0.0%	0.0%	1.9%

PM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Windcross Court **Northbound**				Windcross Court Extension **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes			**1089**	**35**		**108**	**1488**			**62**		**268**					**3050**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1	1	1	1	1	1	1	1	
Growth Trips	0	0	162	5	0	16	222	0	0	0	0	0	0	0	0	0	405
New Road Adjustment	9	44															
CSTS Model Trips (w/o Zone 12)			323				461										784
151/201 CSB Trip Distribution IN		*45%*					*40%*	*15%*									1
151/201 CSB Trip Distribution OUT														*55%*		*10%*	0.65
151/201 CSB Trips	0	72	0	0	0	0	64	24	0	0	0	0	0	122	0	22	304
Optima Trips			39				32										
No-Build 2030 PM Volumes	**9**	**116**	**1613**	**40**	**0**	**124**	**2267**	**24**	**0**	**62**	**0**	**268**	**0**	**122**	**0**	**22**	**4667**
Project Traffic																	
Trip Distribution IN		30%					70%										
Trip Distribution OUT														70%			
Project Trips	0	23	0	0	0	0	55	0	0	0	0	0	0	36	0	0	114
Build 2030 PM Volumes	**9**	**139**	**1613**	**40**	**0**	**124**	**2322**	**24**	**0**	**62**	**0**	**268**	**0**	**158**	**0**	**22**	**4781**
% from Existing	0.0%	0.0%	67.5%	87.5%	0.0%	87.1%	64.1%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	63.8%
% from Background Growth	100.0%	83.5%	32.5%	12.5%	0.0%	12.9%	33.5%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	77.2%	0.0%	100.0%	33.8%
% from Project Trips	0.0%	16.5%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.8%	0.0%	0.0%	2.4%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 4

Cool Springs Boulevard at McEwen Drive

AM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				McEwen Drive Northbound				- Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Existing 2020 Vistro Counts, Balanced volumes with Int 3 with through/turn split %s from Magnetometer Data*)																	
Existing 2023 AM Volumes			**874**	**501**		**93**	**750**			**319**		**223**					**2760**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1	1	1	1	
Growth Trips	0	0	130	75	0	14	112	0	0	48	0	33	0	0	0	0	412
RIRO Driveway Adjustment																	
CSTS Model Trips (w/o Zone 12)			55	251		0	61			155		0					522
151/201 CSB Trip Distribution IN							*30%*			*25%*							0.55
151/201 CSB Trip Distribution OUT			*30%*	*25%*													0.55
151/201 CSB Trips	0	0	40	34	0	0	52	0	0	44	0	0	0	0	0	0	170
Optima Trips		26	-1	0		0	-1	43		0	34	0		58	45	35	
No-Build 2030 AM Volumes	**0**	**26**	**1098**	**861**	**0**	**107**	**974**	**43**	**0**	**566**	**34**	**256**	**0**	**58**	**45**	**35**	**4103**
Project Traffic																	
Trip Distribution IN							50%			20%							
Trip Distribution OUT			50%	20%													
Project Trips	0	0	33	13	0	0	14	0	0	5	0	0	0	0	0	0	65
Build 2030 AM Volumes	**0**	**26**	**1131**	**874**	**0**	**107**	**988**	**43**	**0**	**571**	**34**	**256**	**0**	**58**	**45**	**35**	**4168**
% from Existing	0.0%	0.0%	77.3%	57.3%	0.0%	86.9%	75.9%	0.0%	0.0%	55.9%	0.0%	87.1%	0.0%	0.0%	0.0%	0.0%	66.2%
% from Background Growth	0.0%	100.0%	19.8%	41.2%	0.0%	13.1%	22.7%	100.0%	0.0%	43.3%	100.0%	12.9%	0.0%	100.0%	100.0%	100.0%	32.2%
% from Project Trips	0.0%	0.0%	2.9%	1.5%	0.0%	0.0%	1.4%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%

PM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				McEwen Drive Northbound				- Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes			**954**	**403**		**260**	**1078**			**518**		**179**					**3392**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1	1	1	1	
Growth Trips	0	0	142	60	0	39	161	0	0	77	0	27	0	0	0	0	506
New Road Adjustment																	
CSTS Model Trips (w/o Zone 12)			55	268		0	61			400		0					784
151/201 CSB Trip Distribution IN							*30%*			*25%*							0.55
151/201 CSB Trip Distribution OUT			*30%*	*25%*													0.55
151/201 CSB Trips	0	0	66	55	0	0	48	0	0	40	0	0	0	0	0	0	209
Optima Trips		39	-7	-3		-2	-7	65		-3	51	-1		62	47	42	
No-Build 2030 PM Volumes	**0**	**39**	**1210**	**783**	**0**	**297**	**1341**	**65**	**0**	**1032**	**51**	**205**	**0**	**62**	**47**	**42**	**5174**
Project Traffic																	
Trip Distribution IN							50%			20%							
Trip Distribution OUT			50%	20%													
Project Trips	0	0	26	10	0	0	39	0	0	16	0	0	0	0	0	0	91
Build 2030 PM Volumes	**0**	**39**	**1236**	**793**	**0**	**297**	**1380**	**65**	**0**	**1048**	**51**	**205**	**0**	**62**	**47**	**42**	**5265**
% from Existing	0.0%	0.0%	77.2%	50.8%	0.0%	87.5%	78.1%	0.0%	0.0%	49.4%	0.0%	87.3%	0.0%	0.0%	0.0%	0.0%	64.4%
% from Background Growth	0.0%	100.0%	20.7%	47.9%	0.0%	12.5%	19.1%	100.0%	0.0%	49.0%	100.0%	12.7%	0.0%	100.0%	100.0%	100.0%	33.8%
% from Project Trips	0.0%	0.0%	2.1%	1.3%	0.0%	0.0%	2.8%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%

**Note: Existing EB traffic balanced from Int 3 was split 65%-EBT/35%-EBR. Existing WB traffic balanced from Int 3 was split 65%-WBT/35%-NBL*

APPENDIX D

Synchro Reports

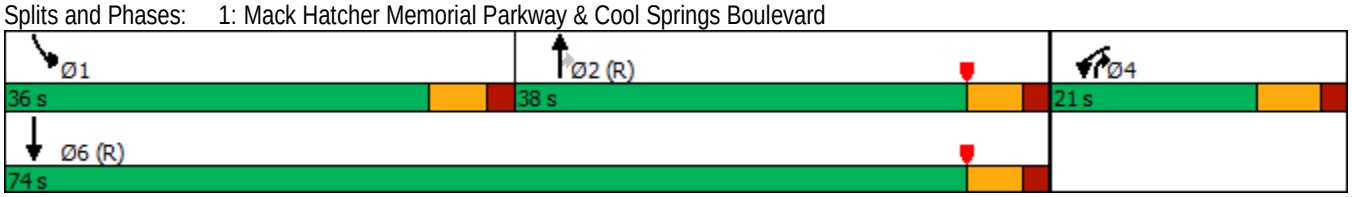
1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	154	695	473	470	921	480
Future Volume (vph)	154	695	473	470	921	480
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	8.0		18.0	8.0	8.0	10.0
Minimum Split (s)	14.5		24.0	14.5	14.0	16.0
Total Split (s)	21.0		38.0	21.0	36.0	74.0
Total Split (%)	22.1%		40.0%	22.1%	37.9%	77.9%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	12.7	95.0	33.8	46.0	30.0	69.8
Actuated g/C Ratio	0.13	1.00	0.36	0.48	0.32	0.73
v/c Ratio	0.37	0.47	0.39	0.64	0.88	0.19
Control Delay	30.4	2.4	24.5	18.1	42.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	2.4	24.5	18.1	42.2	4.3
LOS	C	A	C	B	D	A
Approach Delay	7.5		21.3			29.2
Approach LOS	A		C			C

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 95
Offset: 68 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 21.1 — Intersection LOS: C
Intersection Capacity Utilization 65.9% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	160	724	493	490	959	500
v/c Ratio	0.37	0.47	0.39	0.64	0.88	0.19
Control Delay	30.4	2.4	24.5	18.1	42.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	2.4	24.5	18.1	42.2	4.3
Queue Length 50th (ft)	41	19	117	173	280	43
Queue Length 95th (ft)	70	29	164	267	#393	61
Internal Link Dist (ft)	425		1396			1960
Turn Bay Length (ft)		230		1000	1000	
Base Capacity (vph)	499	1549	1258	797	1084	2599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.47	0.39	0.61	0.88	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	154	695	473	470	921	480
Future Volume (veh/h)	154	695	473	470	921	480
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	0	493	490	959	500
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	275		1467	785	1070	2791
Arrive On Green	0.08	0.00	0.41	0.41	0.31	0.79
Sat Flow, veh/h	3319	1572	3647	1583	3456	3647
Grp Volume(v), veh/h	160	0	493	490	959	500
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1583	1728	1777
Q Serve(g_s), s	4.4	0.0	9.0	21.5	25.2	3.3
Cycle Q Clear(g_c), s	4.4	0.0	9.0	21.5	25.2	3.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	275		1467	785	1070	2791
V/C Ratio(X)	0.58		0.34	0.62	0.90	0.18
Avail Cap(c_a), veh/h	507		1467	785	1091	2791
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	0.0	19.0	17.5	31.3	2.5
Incr Delay (d2), s/veh	4.1	0.0	0.6	3.7	11.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	3.5	9.3	11.4	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	46.1	0.0	19.6	21.2	43.0	2.7
LnGrp LOS	D		B	C	D	A
Approach Vol, veh/h	160		983			1459
Approach Delay, s/veh	46.1		20.4			29.2
Approach LOS	D		C			C

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	35.4	45.2		14.4		80.6
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	30.0	32.0		14.5		68.0
Max Q Clear Time (g_c+I1), s	27.2	23.5		6.4		5.3
Green Ext Time (p_c), s	2.2	6.5		0.6		7.0

Intersection Summary	
HCM 6th Ctrl Delay	26.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	1358	6	15	845	38	1	0	5	4	0	3
Future Vol, veh/h	27	1358	6	15	845	38	1	0	5	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	270	-	-	335	-	130	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	1429	6	16	889	40	1	0	5	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	929	0	0	1435	0	0	1965	2449	718	1692	2412	445
Stage 1	-	-	-	-	-	-	1488	1488	-	921	921	-
Stage 2	-	-	-	-	-	-	477	961	-	771	1491	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	732	-	-	469	-	-	38	31	371	60	32	561
Stage 1	-	-	-	-	-	-	130	186	-	291	347	-
Stage 2	-	-	-	-	-	-	538	333	-	359	185	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	732	-	-	469	-	-	36	29	371	56	30	561
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	114	-	162	111	-
Stage 1	-	-	-	-	-	-	125	179	-	280	335	-
Stage 2	-	-	-	-	-	-	517	322	-	340	178	-

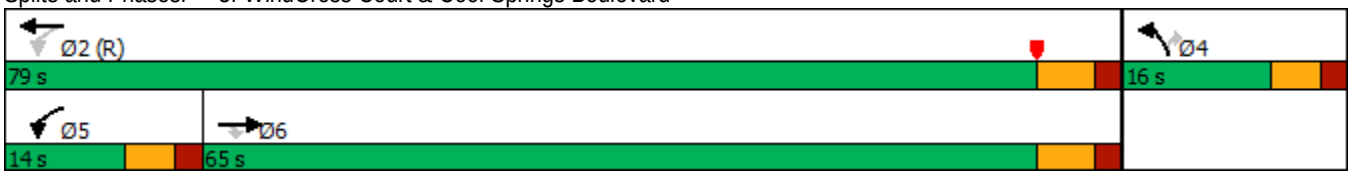
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	19.4	20.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	257	732	-	-	469	-	-	162	561
HCM Lane V/C Ratio	0.025	0.039	-	-	0.034	-	-	0.026	0.006
HCM Control Delay (s)	19.4	10.1	-	-	12.9	-	-	27.8	11.5
HCM Lane LOS	C	B	-	-	B	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-	-	0.1	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1279	88	196	873	25	96
Future Volume (vph)	1279	88	196	873	25	96
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases		6	2			4
Detector Phase	6	6	5	2	4	4
Switch Phase						
Minimum Initial (s)	20.0	20.0	6.0	20.0	8.0	8.0
Minimum Split (s)	26.0	26.0	11.5	26.0	13.5	13.5
Total Split (s)	65.0	65.0	14.0	79.0	16.0	16.0
Total Split (%)	68.4%	68.4%	14.7%	83.2%	16.8%	16.8%
Yellow Time (s)	4.0	4.0	3.5	4.0	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	C-Max	Max	Max
Act Effct Green (s)	59.1	59.1	73.5	73.0	10.5	10.5
Actuated g/C Ratio	0.62	0.62	0.77	0.77	0.11	0.11
v/c Ratio	0.63	0.09	0.68	0.35	0.14	0.39
Control Delay	16.7	3.0	28.1	2.5	40.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	3.0	28.1	2.5	40.1	12.8
LOS	B	A	C	A	D	B
Approach Delay	15.8			7.2	18.4	
Approach LOS	B			A	B	

Intersection Summary	
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 12.3	Intersection LOS: B
Intersection Capacity Utilization 67.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1390	96	213	949	27	104
v/c Ratio	0.63	0.09	0.68	0.35	0.14	0.39
Control Delay	16.7	3.0	28.1	2.5	40.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	3.0	28.1	2.5	40.1	12.8
Queue Length 50th (ft)	367	13	28	48	15	0
Queue Length 95th (ft)	m431	m16	m98	60	41	47
Internal Link Dist (ft)	434			1340	817	
Turn Bay Length (ft)		300	360			150
Base Capacity (vph)	2202	1021	313	2719	195	267
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.09	0.68	0.35	0.14	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1279	88	196	873	25	96
Future Volume (veh/h)	1279	88	196	873	25	96
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1390	96	213	949	27	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2301	1026	337	2731	197	175
Arrive On Green	0.65	0.65	0.13	1.00	0.11	0.11
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	1390	96	213	949	27	104
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	21.5	2.2	3.7	0.0	1.3	5.9
Cycle Q Clear(g_c), s	21.5	2.2	3.7	0.0	1.3	5.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2301	1026	337	2731	197	175
V/C Ratio(X)	0.60	0.09	0.63	0.35	0.14	0.59
Avail Cap(c_a), veh/h	2301	1026	385	2731	197	175
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.88	0.88	1.00	1.00
Uniform Delay (d), s/veh	9.7	6.3	9.8	0.0	38.2	40.2
Incr Delay (d2), s/veh	0.7	0.1	3.0	0.3	1.4	13.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	0.6	1.7	0.1	0.6	5.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.4	6.4	12.9	0.3	39.6	54.2
LnGrp LOS	B	A	B	A	D	D
Approach Vol, veh/h	1486			1162	131	
Approach Delay, s/veh	10.1			2.6	51.2	
Approach LOS	B			A	D	

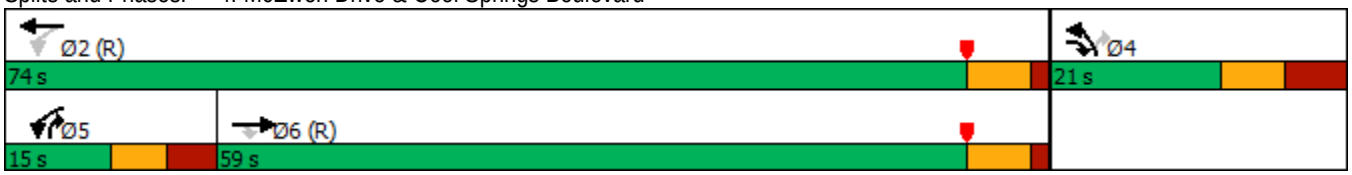
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		79.0		16.0	11.5	67.5
Change Period (Y+Rc), s		6.0		5.5	5.5	6.0
Max Green Setting (Gmax), s		73.0		10.5	8.5	59.0
Max Q Clear Time (g_c+I1), s		2.0		7.9	5.7	23.5
Green Ext Time (p_c), s		17.8		0.2	0.2	23.8

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	874	501	93	750	319	223
Future Volume (vph)	874	501	93	750	319	223
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov
Protected Phases	6	4	5	2	4	5
Permitted Phases		6	2			4
Detector Phase	6	4	5	2	4	5
Switch Phase						
Minimum Initial (s)	15.0	7.0	6.0	15.0	7.0	6.0
Minimum Split (s)	21.0	16.0	13.5	21.0	16.0	13.5
Total Split (s)	59.0	21.0	15.0	74.0	21.0	15.0
Total Split (%)	62.1%	22.1%	15.8%	77.9%	22.1%	15.8%
Yellow Time (s)	4.5	4.5	4.0	4.5	4.5	4.0
All-Red Time (s)	1.5	4.5	3.5	1.5	4.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	9.0	7.5	6.0	9.0	7.5
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max	None	None	C-Max	None	None
Act Effct Green (s)	54.3	72.0	66.8	68.3	11.7	27.2
Actuated g/C Ratio	0.57	0.76	0.70	0.72	0.12	0.29
v/c Ratio	0.47	0.41	0.27	0.32	0.82	0.45
Control Delay	5.7	0.7	6.3	5.3	57.9	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	0.7	6.3	5.3	57.9	17.0
LOS	A	A	A	A	E	B
Approach Delay	3.9			5.4	41.1	
Approach LOS	A			A	D	

Intersection Summary	
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 11.7	Intersection LOS: B
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	950	545	101	815	347	242
v/c Ratio	0.47	0.41	0.27	0.32	0.82	0.45
Control Delay	5.7	0.7	6.3	5.3	57.9	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	0.7	6.3	5.3	57.9	17.0
Queue Length 50th (ft)	39	1	17	81	106	59
Queue Length 95th (ft)	103	0	32	106	#172	127
Internal Link Dist (ft)	1340			514	620	
Turn Bay Length (ft)		260	260			300
Base Capacity (vph)	2024	1335	393	2546	433	550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.41	0.26	0.32	0.80	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	874	501	93	750	319	223
Future Volume (veh/h)	874	501	93	750	319	223
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	950	545	101	815	347	242
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2054	1117	330	2544	437	293
Arrive On Green	0.58	0.58	0.06	0.72	0.13	0.13
Sat Flow, veh/h	3647	1585	1781	3647	3456	1585
Grp Volume(v), veh/h	950	545	101	815	347	242
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1728	1585
Q Serve(g_s), s	14.6	14.7	2.0	8.0	9.3	12.0
Cycle Q Clear(g_c), s	14.6	14.7	2.0	8.0	9.3	12.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2054	1117	330	2544	437	293
V/C Ratio(X)	0.46	0.49	0.31	0.32	0.79	0.82
Avail Cap(c_a), veh/h	2054	1117	366	2544	437	293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	6.3	7.9	5.0	40.3	37.2
Incr Delay (d2), s/veh	0.6	1.1	0.2	0.3	9.1	16.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	6.8	0.6	2.3	4.4	12.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.1	7.5	8.1	5.3	49.4	53.5
LnGrp LOS	B	A	A	A	D	D
Approach Vol, veh/h	1495			916	589	
Approach Delay, s/veh	10.4			5.6	51.1	
Approach LOS	B			A	D	

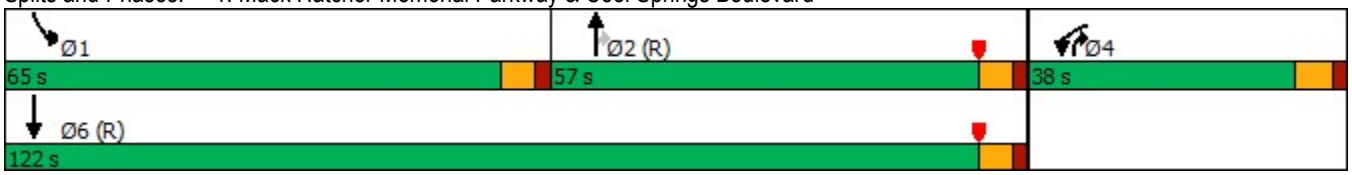
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		74.0		21.0	13.1	60.9
Change Period (Y+Rc), s		6.0		9.0	7.5	6.0
Max Green Setting (Gmax), s		68.0		12.0	7.5	53.0
Max Q Clear Time (g_c+I1), s		10.0		14.0	4.0	16.7
Green Ext Time (p_c), s		20.5		0.0	0.0	27.8

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	457	1104	513	343	736	482
Future Volume (vph)	457	1104	513	343	736	482
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	8.0		18.0	8.0	8.0	10.0
Minimum Split (s)	14.5		24.0	14.5	14.0	16.0
Total Split (s)	38.0		57.0	38.0	65.0	122.0
Total Split (%)	23.8%		35.6%	23.8%	40.6%	76.3%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	29.5	160.0	62.4	97.9	49.6	118.0
Actuated g/C Ratio	0.18	1.00	0.39	0.61	0.31	0.74
v/c Ratio	0.77	0.74	0.40	0.37	0.74	0.20
Control Delay	64.6	8.1	37.9	14.7	53.4	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	8.1	37.9	14.7	53.4	6.8
LOS	E	A	D	B	D	A
Approach Delay	24.7		28.6			34.9
Approach LOS	C		C			C

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 116 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 29.0	Intersection LOS: C
Intersection Capacity Utilization 64.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	486	1174	546	365	783	513
v/c Ratio	0.77	0.74	0.40	0.37	0.74	0.20
Control Delay	64.6	8.1	37.9	14.7	53.4	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	8.1	37.9	14.7	53.4	6.8
Queue Length 50th (ft)	259	828	221	150	378	83
Queue Length 95th (ft)	323	1025	301	251	418	104
Internal Link Dist (ft)	425		1396			1960
Turn Bay Length (ft)		230		1000	1000	
Base Capacity (vph)	675	1583	1379	1012	1265	2609
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.74	0.40	0.36	0.62	0.20

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	457	1104	513	343	736	482
Future Volume (veh/h)	457	1104	513	343	736	482
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	486	0	546	365	783	513
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	563		1535	943	1001	2697
Arrive On Green	0.16	0.00	0.43	0.43	0.29	0.76
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	486	0	546	365	783	513
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	21.9	0.0	16.5	19.4	33.3	6.5
Cycle Q Clear(g_c), s	21.9	0.0	16.5	19.4	33.3	6.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	563		1535	943	1001	2697
V/C Ratio(X)	0.86		0.36	0.39	0.78	0.19
Avail Cap(c_a), veh/h	680		1535	943	1274	2697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.2	0.0	30.5	17.1	52.2	5.4
Incr Delay (d2), s/veh	11.7	0.0	0.6	1.2	6.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	7.1	10.6	15.0	2.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	76.9	0.0	31.2	18.3	58.3	5.6
LnGrp LOS	E		C	B	E	A
Approach Vol, veh/h	486		911			1296
Approach Delay, s/veh	76.9		26.0			37.4
Approach LOS	E		C			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	52.3	75.1		32.6		127.4
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	59.0	51.0		31.5		116.0
Max Q Clear Time (g_c+I1), s	35.3	21.4		23.9		8.5
Green Ext Time (p_c), s	11.0	16.1		2.2		7.3

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1070	6	11	1532	7	9	0	12	42	0	18
Future Vol, veh/h	2	1070	6	11	1532	7	9	0	12	42	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	270	-	-	335	-	130	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1126	6	12	1613	7	9	0	13	44	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1620	0	0	1132	0	0	1964	2777	566	2204	2773	807
Stage 1	-	-	-	-	-	-	1133	1133	-	1637	1637	-
Stage 2	-	-	-	-	-	-	831	1644	-	567	1136	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	398	-	-	613	-	-	38	19	467	~ 25	19	324
Stage 1	-	-	-	-	-	-	216	276	-	105	157	-
Stage 2	-	-	-	-	-	-	330	156	-	476	275	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	398	-	-	613	-	-	35	19	467	~ 24	19	324
Mov Cap-2 Maneuver	-	-	-	-	-	-	130	97	-	83	97	-
Stage 1	-	-	-	-	-	-	215	275	-	104	154	-
Stage 2	-	-	-	-	-	-	305	153	-	461	274	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	23.1	67.8
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	221	398	-	-	613	-	-	83	324
HCM Lane V/C Ratio	0.1	0.005	-	-	0.019	-	-	0.533	0.058
HCM Control Delay (s)	23.1	14.1	-	-	11	-	-	89.7	16.8
HCM Lane LOS	C	B	-	-	B	-	-	F	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	2.3	0.2

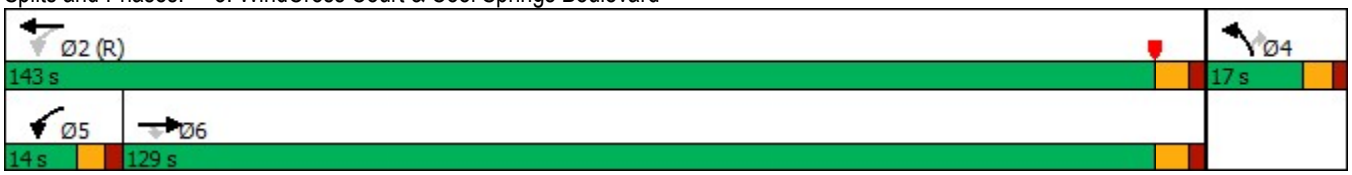
Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1106	18	127	1488	62	268
Future Volume (vph)	1106	18	127	1488	62	268
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases		6	2			4
Detector Phase	6	6	5	2	4	4
Switch Phase						
Minimum Initial (s)	20.0	20.0	6.0	20.0	8.0	8.0
Minimum Split (s)	26.0	26.0	11.5	26.0	13.5	13.5
Total Split (s)	129.0	129.0	14.0	143.0	17.0	17.0
Total Split (%)	80.6%	80.6%	8.8%	89.4%	10.6%	10.6%
Yellow Time (s)	4.0	4.0	3.5	4.0	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	C-Max	Max	Max
Act Effct Green (s)	123.4	123.4	137.5	137.0	11.5	11.5
Actuated g/C Ratio	0.77	0.77	0.86	0.86	0.07	0.07
v/c Ratio	0.44	0.02	0.35	0.53	0.53	0.97
Control Delay	12.5	1.2	3.2	2.2	87.2	68.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	1.2	3.2	2.2	87.2	68.2
LOS	B	A	A	A	F	E
Approach Delay	12.4			2.3	71.7	
Approach LOS	B			A	E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 13.4	Intersection LOS: B
Intersection Capacity Utilization 58.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1202	20	138	1617	67	291
v/c Ratio	0.44	0.02	0.35	0.53	0.53	0.97
Control Delay	12.5	1.2	3.2	2.2	87.2	68.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	1.2	3.2	2.2	87.2	68.2
Queue Length 50th (ft)	485	2	11	98	69	100
Queue Length 95th (ft)	516	m4	m16	m107	125	#300
Internal Link Dist (ft)	434			1340	817	
Turn Bay Length (ft)		300	360			150
Base Capacity (vph)	2728	1225	393	3030	127	299
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.02	0.35	0.53	0.53	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1106	18	127	1488	62	268
Future Volume (veh/h)	1106	18	127	1488	62	268
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1202	20	138	1617	67	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2788	1243	425	3043	128	114
Arrive On Green	0.78	0.78	0.07	1.00	0.07	0.07
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	1202	20	138	1617	67	89
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	17.6	0.4	2.3	0.0	5.8	8.8
Cycle Q Clear(g_c), s	17.6	0.4	2.3	0.0	5.8	8.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2788	1243	425	3043	128	114
V/C Ratio(X)	0.43	0.02	0.32	0.53	0.52	0.78
Avail Cap(c_a), veh/h	2788	1243	453	3043	128	114
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.74	0.74	1.00	1.00
Uniform Delay (d), s/veh	5.6	3.8	3.9	0.0	71.6	73.0
Incr Delay (d2), s/veh	0.2	0.0	0.5	0.5	14.5	40.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.1	0.7	0.2	3.2	8.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.8	3.8	4.4	0.5	86.1	113.1
LnGrp LOS	A	A	A	A	F	F
Approach Vol, veh/h	1222			1755	156	
Approach Delay, s/veh	5.8			0.8	101.5	
Approach LOS	A			A	F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		143.0		17.0	11.5	131.5
Change Period (Y+Rc), s		6.0		5.5	5.5	6.0
Max Green Setting (Gmax), s		137.0		11.5	8.5	123.0
Max Q Clear Time (g_c+I1), s		2.0		10.8	4.3	19.6
Green Ext Time (p_c), s		62.8		0.1	0.2	31.7

Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A

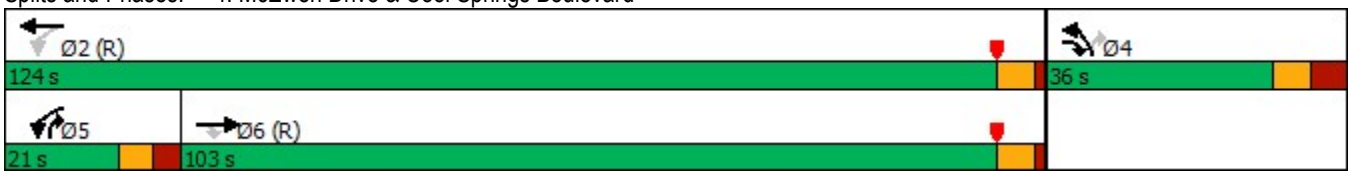
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	971	403	260	1097	518	179
Future Volume (vph)	971	403	260	1097	518	179
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov
Protected Phases	6	4	5	2	4	5
Permitted Phases		6	2			4
Detector Phase	6	4	5	2	4	5
Switch Phase						
Minimum Initial (s)	15.0	7.0	6.0	15.0	7.0	6.0
Minimum Split (s)	21.0	16.0	13.5	21.0	16.0	13.5
Total Split (s)	103.0	36.0	21.0	124.0	36.0	21.0
Total Split (%)	64.4%	22.5%	13.1%	77.5%	22.5%	13.1%
Yellow Time (s)	4.5	4.5	4.0	4.5	4.5	4.0
All-Red Time (s)	1.5	4.5	3.5	1.5	4.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	9.0	7.5	6.0	9.0	7.5
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max	None	None	C-Max	None	None
Act Effct Green (s)	98.4	131.4	116.5	118.0	27.0	48.1
Actuated g/C Ratio	0.62	0.82	0.73	0.74	0.17	0.30
v/c Ratio	0.49	0.33	0.76	0.46	0.97	0.35
Control Delay	7.0	1.1	21.5	9.0	96.3	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	1.1	21.5	9.0	96.3	20.3
LOS	A	A	C	A	F	C
Approach Delay	5.2			11.4	76.8	
Approach LOS	A			B	E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1055	438	283	1192	563	195
v/c Ratio	0.49	0.33	0.76	0.46	0.97	0.35
Control Delay	7.0	1.1	21.5	9.0	96.3	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	1.1	21.5	9.0	96.3	20.3
Queue Length 50th (ft)	108	10	88	236	306	67
Queue Length 95th (ft)	m121	m17	129	275	#428	140
Internal Link Dist (ft)	1340			514	620	
Turn Bay Length (ft)		260	260			300
Base Capacity (vph)	2175	1335	385	2610	579	565
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.33	0.74	0.46	0.97	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	971	403	260	1097	518	179
Future Volume (veh/h)	971	403	260	1097	518	179
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1055	438	283	1192	563	195
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2208	1252	415	2621	583	377
Arrive On Green	0.62	0.62	0.07	0.74	0.17	0.17
Sat Flow, veh/h	3647	1585	1781	3647	3456	1585
Grp Volume(v), veh/h	1055	438	283	1192	563	195
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1728	1585
Q Serve(g_s), s	25.6	12.8	9.0	21.2	25.9	17.1
Cycle Q Clear(g_c), s	25.6	12.8	9.0	21.2	25.9	17.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2208	1252	415	2621	583	377
V/C Ratio(X)	0.48	0.35	0.68	0.45	0.97	0.52
Avail Cap(c_a), veh/h	2208	1252	442	2621	583	377
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	4.9	13.4	8.3	66.0	53.0
Incr Delay (d2), s/veh	0.6	0.6	3.1	0.6	28.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	8.7	3.8	8.1	13.8	15.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.9	5.5	16.5	8.9	94.5	53.5
LnGrp LOS	B	A	B	A	F	D
Approach Vol, veh/h	1493			1475	758	
Approach Delay, s/veh	13.6			10.3	84.0	
Approach LOS	B			B	F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		124.0		36.0	18.6	105.4
Change Period (Y+Rc), s		6.0		9.0	7.5	6.0
Max Green Setting (Gmax), s		118.0		27.0	13.5	97.0
Max Q Clear Time (g_c+I1), s		23.2		27.9	11.0	27.6
Green Ext Time (p_c), s		46.5		0.0	0.1	46.2

Intersection Summary	
HCM 6th Ctrl Delay	26.6
HCM 6th LOS	C

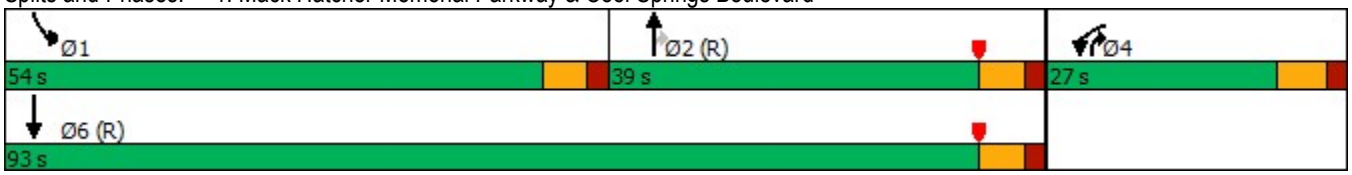
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	280	935	502	645	1241	509
Future Volume (vph)	280	935	502	645	1241	509
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	20.5	120.0	33.0	53.0	48.0	87.0
Actuated g/C Ratio	0.17	1.00	0.28	0.44	0.40	0.72
v/c Ratio	0.52	0.63	0.54	0.96	0.94	0.21
Control Delay	34.0	10.8	39.5	54.1	48.9	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	10.8	39.5	54.1	48.9	5.6
LOS	C	B	D	D	D	A
Approach Delay	16.2		47.7			36.3
Approach LOS	B		D			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 33.5	Intersection LOS: C
Intersection Capacity Utilization 85.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Maximum Green (s)	20.5		33.0	20.5	48.0	87.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
10th %ile Term Code	Max		Coord	Max	Max	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	280	935	502	645	1241	509
Future Volume (veh/h)	280	935	502	645	1241	509
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	292	0	523	672	1293	530
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	498		1060	710	1374	2650
Arrive On Green	0.15	0.00	0.30	0.30	0.40	0.75
Sat Flow, veh/h	3319	1572	3647	1582	3456	3647
Grp Volume(v), veh/h	292	0	523	672	1293	530
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1582	1728	1777
Q Serve(g_s), s	9.8	0.0	14.5	35.8	43.2	5.3
Cycle Q Clear(g_c), s	9.8	0.0	14.5	35.8	43.2	5.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	498		1060	710	1374	2650
V/C Ratio(X)	0.59		0.49	0.95	0.94	0.20
Avail Cap(c_a), veh/h	567		1060	710	1382	2650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	34.7	28.1	34.8	4.6
Incr Delay (d2), s/veh	2.4	0.0	1.6	23.1	13.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	6.3	24.5	19.7	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.0	0.0	36.3	51.2	48.5	4.7
LnGrp LOS	D		D	D	D	A
Approach Vol, veh/h	292		1195			1823
Approach Delay, s/veh	50.0		44.7			35.8
Approach LOS	D		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	53.7	41.8		24.5		95.5
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	48.0	33.0		20.5		87.0
Max Q Clear Time (g_c+I1), s	45.2	37.8		11.8		7.3
Green Ext Time (p_c), s	2.5	0.0		1.3		7.6

Intersection Summary	
HCM 6th Ctrl Delay	40.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1853	6	15	1143	108	0	0	6	0	0	68
Future Vol, veh/h	0	1853	6	15	1143	108	0	0	6	0	0	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1951	6	16	1203	114	0	0	6	0	0	72

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1957	0	0	-	-	979	-	-	602
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	294	-	-	0	0	249	0	0	443
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	294	-	-	-	-	249	-	-	443
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

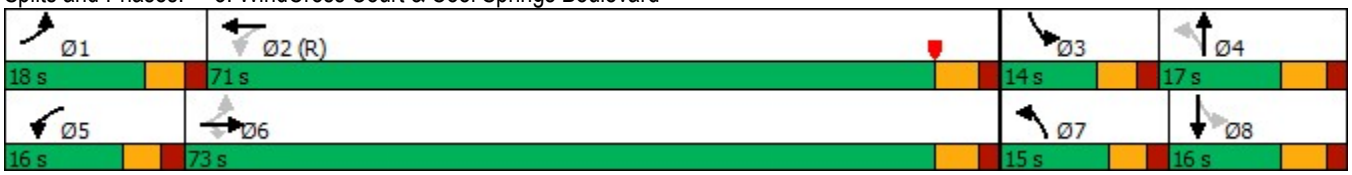
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	19.8	14.7
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	249	-	-	294	-	-	443
HCM Lane V/C Ratio	0.025	-	-	0.054	-	-	0.162
HCM Control Delay (s)	19.8	-	-	17.9	-	-	14.7
HCM Lane LOS	C	-	-	C	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	110	1662	92	204	1228	25	0	74	0
Future Volume (vph)	110	1662	92	204	1228	25	0	74	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	6	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	78.4	68.7	68.7	83.5	71.7	19.1	10.4	16.3	12.8
Actuated g/C Ratio	0.65	0.57	0.57	0.70	0.60	0.16	0.09	0.14	0.11
v/c Ratio	0.45	0.89	0.10	0.91	0.65	0.11	0.33	0.38	0.04
Control Delay	8.9	32.3	3.4	70.1	18.7	39.4	2.7	48.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	32.3	3.4	70.1	18.7	39.4	2.7	48.6	0.2
LOS	A	C	A	E	B	D	A	D	A
Approach Delay		29.5			25.9		10.3		41.4
Approach LOS		C			C		B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 27.6	Intersection LOS: C
Intersection Capacity Utilization 82.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Maximum Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	12.0	67.0	67.0	10.5	65.5	9.5	11.0	8.5	10.0
90th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
70th %ile Green (s)	9.9	67.0	67.0	10.5	67.6	9.5	11.0	8.5	10.0
70th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
50th %ile Green (s)	9.0	67.0	67.0	11.5	69.5	24.5	10.0	8.5	0.0
50th %ile Term Code	Gap	Coord	Coord	Max	Coord	Hold	Min	Max	Skip
30th %ile Green (s)	8.3	67.0	67.0	11.5	70.2	0.0	10.0	8.5	24.0
30th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold
10th %ile Green (s)	7.0	75.4	75.4	17.1	85.5	0.0	10.0	0.0	10.0
10th %ile Term Code	Gap	Coord	Coord	Gap	Coord	Skip	Min	Skip	Hold

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1662	92	204	1228	26	25	0	96	74	0	13
Future Volume (veh/h)	110	1662	92	204	1228	26	25	0	96	74	0	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	1807	100	222	1335	28	27	0	104	80	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	2048	914	248	2187	46	246	0	131	194	0	167
Arrive On Green	0.05	0.58	0.58	0.09	0.61	0.61	0.04	0.00	0.08	0.06	0.00	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3559	75	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	120	1807	100	222	666	697	27	0	104	80	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1857	1781	0	1585	1781	0	1585
Q Serve(g_s), s	3.2	52.6	3.4	8.5	27.7	27.8	1.6	0.0	7.7	4.8	0.0	1.0
Cycle Q Clear(g_c), s	3.2	52.6	3.4	8.5	27.7	27.8	1.6	0.0	7.7	4.8	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	300	2048	914	248	1092	1141	246	0	131	194	0	167
V/C Ratio(X)	0.40	0.88	0.11	0.90	0.61	0.61	0.11	0.00	0.79	0.41	0.00	0.08
Avail Cap(c_a), veh/h	398	2048	914	248	1092	1141	317	0	145	210	0	167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	21.9	11.5	34.5	14.3	14.3	46.9	0.0	54.0	46.2	0.0	48.5
Incr Delay (d2), s/veh	1.2	5.2	0.1	25.9	1.9	1.9	0.4	0.0	28.2	3.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	21.3	1.2	8.2	10.7	11.2	0.8	0.0	4.1	2.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.5	27.1	11.6	60.4	16.2	16.1	47.4	0.0	82.2	49.2	0.0	48.9
LnGrp LOS	B	C	B	E	B	B	D	A	F	D	A	D
Approach Vol, veh/h		2027			1585			131			94	
Approach Delay, s/veh		25.6			22.4			75.0			49.2	
Approach LOS		C			C			E			D	

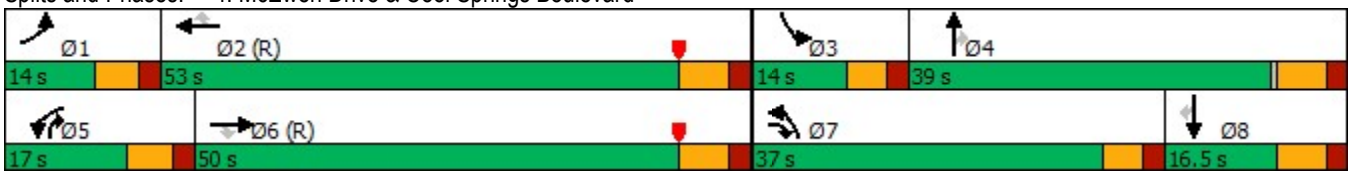
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	79.7	12.9	15.9	16.0	75.2	10.2	18.6
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	65.0	8.5	11.0	10.5	67.0	9.5	10.0
Max Q Clear Time (g_c+I1), s	5.2	29.8	6.8	9.7	10.5	54.6	3.6	3.0
Green Ext Time (p_c), s	0.2	21.7	0.0	0.1	0.0	11.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	26.5
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1003	806	97	892	43	531	34	232	58	45	35
Future Volume (vph)	26	1003	806	97	892	43	531	34	232	58	45	35
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	2	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	6.5	5.5	6.5	6.0	5.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	7.6	48.2	85.2	10.6	56.4	56.4	30.5	26.9	40.7	16.3	10.0	10.0
Actuated g/C Ratio	0.06	0.40	0.71	0.09	0.47	0.47	0.25	0.22	0.34	0.14	0.08	0.08
v/c Ratio	0.25	0.77	0.71	0.68	0.59	0.06	0.66	0.09	0.43	0.26	0.32	0.13
Control Delay	59.4	37.5	9.6	75.1	28.1	0.1	44.5	35.2	21.8	53.5	58.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	37.5	9.6	75.1	28.1	0.1	44.5	35.2	21.8	53.5	58.0	0.9
LOS	E	D	A	E	C	A	D	D	C	D	E	A
Approach Delay		25.5			31.3			37.5			41.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 120.5	
Actuated Cycle Length: 120.5	
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 30.2	Intersection LOS: C
Intersection Capacity Utilization 78.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Maximum Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	32.5	11.0	8.5	10.0	10.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
30th %ile Green (s)	0.0	43.5	31.5	11.0	60.5	60.5	31.5	0.0	11.0	48.0	10.0	10.0
30th %ile Term Code	Skip	Coord	Max	Max	Coord	Coord	Max	Skip	Max	Hold	Max	Max
10th %ile Green (s)	0.0	67.0	26.6	8.9	81.9	81.9	26.6	25.6	8.9	0.0	0.0	0.0
10th %ile Term Code	Skip	Coord	Gap	Gap	Coord	Coord	Gap	Hold	Gap	Skip	Skip	Skip

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 120.5
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1003	806	97	892	43	531	34	232	58	45	35
Future Volume (veh/h)	26	1003	806	97	892	43	531	34	232	58	45	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1090	876	105	970	47	577	37	252	63	49	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1549	1014	130	1701	759	703	427	478	104	156	132
Arrive On Green	0.03	0.44	0.44	0.07	0.48	0.48	0.20	0.23	0.23	0.06	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	28	1090	876	105	970	47	577	37	252	63	49	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	29.9	52.3	7.0	23.5	1.9	19.2	1.9	15.8	4.1	3.0	2.7
Cycle Q Clear(g_c), s	1.9	29.9	52.3	7.0	23.5	1.9	19.2	1.9	15.8	4.1	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1549	1014	130	1701	759	703	427	478	104	156	132
V/C Ratio(X)	0.52	0.70	0.86	0.81	0.57	0.06	0.82	0.09	0.53	0.60	0.31	0.29
Avail Cap(c_a), veh/h	119	1549	1014	163	1701	759	907	507	545	126	156	132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.37	0.37	0.37	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	27.5	17.4	54.8	22.4	16.8	45.7	36.4	34.8	55.1	51.8	51.7
Incr Delay (d2), s/veh	4.0	1.0	3.9	23.2	1.4	0.2	6.6	0.2	1.9	11.5	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	12.4	19.0	3.9	9.7	0.7	8.8	0.9	6.4	2.2	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	28.5	21.4	78.0	23.8	17.0	52.3	36.6	36.8	66.6	54.2	54.2
LnGrp LOS	E	C	C	E	C	B	D	D	D	E	D	D
Approach Vol, veh/h		1994			1122			866			150	
Approach Delay, s/veh		25.8			28.6			47.1			59.4	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	63.9	12.5	33.9	14.8	58.8	29.9	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	46.5	8.5	32.5	11.0	43.5	31.5	10.0
Max Q Clear Time (g_c+I1), s	3.9	25.5	6.1	17.8	9.0	54.3	21.2	5.0
Green Ext Time (p_c), s	0.0	11.5	0.0	1.9	0.1	0.0	3.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C

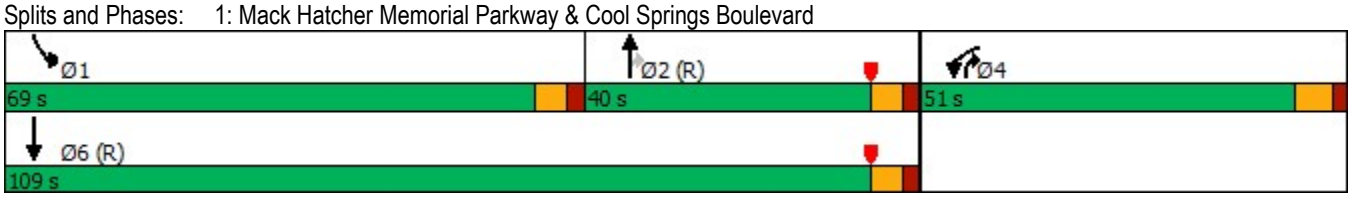
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	733	1557	544	516	1062	511
Future Volume (vph)	733	1557	544	516	1062	511
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	43.5	160.0	36.1	85.6	61.9	104.0
Actuated g/C Ratio	0.27	1.00	0.23	0.54	0.39	0.65
v/c Ratio	0.84	1.05	0.72	0.64	0.85	0.24
Control Delay	57.4	54.8	64.0	29.7	52.1	12.0
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	57.4	54.8	64.0	30.3	52.1	12.0
LOS	E	D	E	C	D	B
Approach Delay	55.6		47.6			39.1
Approach LOS	E		D			D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 48.6	Intersection LOS: D
Intersection Capacity Utilization 81.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Maximum Green (s)	44.5		34.0	44.5	63.0	103.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	39.4		44.6	39.4	57.5	108.1
10th %ile Term Code	Gap		Coord	Gap	Gap	Coord

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	733	1557	544	516	1062	511
Future Volume (veh/h)	733	1557	544	516	1062	511
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	780	0	579	549	1130	544
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	873		912	807	1296	2379
Arrive On Green	0.25	0.00	0.26	0.26	0.38	0.67
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	780	0	579	549	1130	544
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	34.9	0.0	23.1	41.1	48.6	9.6
Cycle Q Clear(g_c), s	34.9	0.0	23.1	41.1	48.6	9.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	873		912	807	1296	2379
V/C Ratio(X)	0.89		0.63	0.68	0.87	0.23
Avail Cap(c_a), veh/h	961		912	807	1361	2379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.7	0.0	52.8	29.3	46.4	10.3
Incr Delay (d2), s/veh	11.2	0.0	3.4	4.6	8.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.4	0.0	10.6	23.4	21.8	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.9	0.0	56.2	33.9	54.7	10.6
LnGrp LOS	E		E	C	D	B
Approach Vol, veh/h	780		1128			1674
Approach Delay, s/veh	68.9		45.3			40.3
Approach LOS	E		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	66.0	47.1		46.9		113.1
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	63.0	34.0		44.5		103.0
Max Q Clear Time (g_c+I1), s	50.6	43.1		36.9		11.6
Green Ext Time (p_c), s	9.4	0.0		3.5		7.9

Intersection Summary	
HCM 6th Ctrl Delay	48.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1591	6	11	2117	71	0	0	21	0	0	116
Future Vol, veh/h	0	1591	6	11	2117	71	0	0	21	0	0	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1675	6	12	2228	75	0	0	22	0	0	122

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1681	0	0	-	-	841	-	-	1114
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	377	-	-	0	0	308	0	0	203
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	377	-	-	-	-	308	-	-	203
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

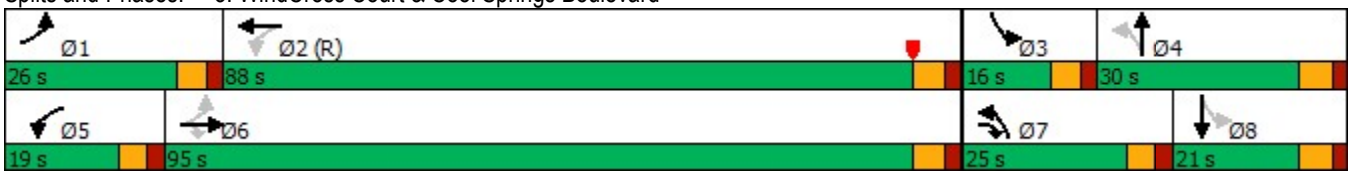
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	17.6	46.4
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	308	-	-	377	-	-	203
HCM Lane V/C Ratio	0.072	-	-	0.031	-	-	0.602
HCM Control Delay (s)	17.6	-	-	14.9	-	-	46.4
HCM Lane LOS	C	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	-	3.4

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	125	1512	19	132	2105	62	0	122	0
Future Volume (vph)	125	1512	19	132	2105	62	0	122	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	7	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	26.0	95.0	25.0	19.0	88.0	25.0	30.0	16.0	21.0
Total Split (%)	16.3%	59.4%	15.6%	11.9%	55.0%	15.6%	18.8%	10.0%	13.1%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	5.5	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	109.5	95.2	121.5	105.7	93.1	34.5	19.2	22.6	15.8
Actuated g/C Ratio	0.68	0.60	0.76	0.66	0.58	0.22	0.12	0.14	0.10
v/c Ratio	0.67	0.78	0.02	0.71	1.13	0.22	0.86	0.81	0.06
Control Delay	38.5	49.6	1.4	34.8	92.3	50.3	50.6	91.8	0.3
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	50.5	1.4	34.8	92.3	50.3	50.6	91.8	0.3
LOS	D	D	A	C	F	D	D	F	A
Approach Delay		49.0			89.0		50.5		77.8
Approach LOS		D			F		D		E

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 70.6	Intersection LOS: E
Intersection Capacity Utilization 108.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	26.0	95.0	25.0	19.0	88.0	25.0	30.0	16.0	21.0
Total Split (%)	16.3%	59.4%	15.6%	11.9%	55.0%	15.6%	18.8%	10.0%	13.1%
Maximum Green (s)	20.5	89.0	19.5	13.5	82.0	19.5	24.0	10.5	15.0
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	20.4	89.0	15.9	13.5	82.1	15.9	24.0	10.5	18.6
90th %ile Term Code	Gap	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
70th %ile Green (s)	16.7	89.0	13.6	13.5	85.8	13.6	24.0	10.5	20.9
70th %ile Term Code	Gap	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
50th %ile Green (s)	14.1	91.0	12.3	14.1	91.0	12.3	21.4	10.5	19.6
50th %ile Term Code	Gap	Coord	Gap	Gap	Coord	Gap	Gap	Max	Hold
30th %ile Green (s)	11.6	98.6	33.3	11.1	98.1	33.3	16.8	10.5	0.0
30th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip
10th %ile Green (s)	7.9	108.2	26.5	8.3	108.6	26.5	10.0	10.5	0.0
10th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Min	Max	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	1512	19	132	2105	24	62	0	268	122	0	22
Future Volume (veh/h)	125	1512	19	132	2105	24	62	0	268	122	0	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	1643	21	143	2288	26	67	0	130	133	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	2309	1105	226	2262	26	265	0	155	183	0	184
Arrive On Green	0.06	0.65	0.65	0.06	0.84	0.84	0.05	0.00	0.10	0.07	0.00	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3599	41	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	136	1643	21	143	1127	1187	67	0	130	133	0	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1863	1781	0	1585	1781	0	1585
Q Serve(g_s), s	8.0	48.2	0.7	4.7	100.5	100.5	5.3	0.0	12.9	10.5	0.0	2.2
Cycle Q Clear(g_c), s	8.0	48.2	0.7	4.7	100.5	100.5	5.3	0.0	12.9	10.5	0.0	2.2
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	2309	1105	226	1117	1171	265	0	155	183	0	184
V/C Ratio(X)	0.85	0.71	0.02	0.63	1.01	1.01	0.25	0.00	0.84	0.73	0.00	0.13
Avail Cap(c_a), veh/h	273	2309	1105	299	1117	1171	398	0	238	183	0	184
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.34	0.34	0.34	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.2	18.3	7.4	20.9	13.1	13.1	60.7	0.0	71.0	61.4	0.0	63.5
Incr Delay (d2), s/veh	15.9	1.3	0.0	1.4	18.1	18.8	1.1	0.0	23.5	16.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	19.1	0.2	2.5	25.1	26.6	2.5	0.0	6.3	5.7	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.1	19.6	7.5	22.4	31.3	32.0	61.8	0.0	94.5	77.6	0.0	64.2
LnGrp LOS	E	B	A	C	F	F	E	A	F	E	A	E
Approach Vol, veh/h		1800			2457			197			157	
Approach Delay, s/veh		23.4			31.1			83.4			75.5	
Approach LOS		C			C			F			E	

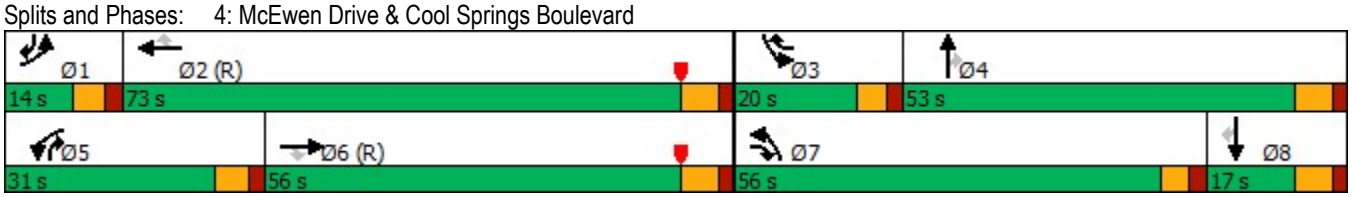
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	106.5	16.0	21.6	12.4	109.9	13.1	24.5
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	20.5	82.0	10.5	24.0	13.5	89.0	19.5	15.0
Max Q Clear Time (g_c+I1), s	10.0	102.5	12.5	14.9	6.7	50.2	7.3	4.2
Green Ext Time (p_c), s	0.4	0.0	0.0	0.7	0.3	29.1	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	31.8
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1124	739	268	1243	65	976	51	185	62	47	42
Future Volume (vph)	39	1124	739	268	1243	65	976	51	185	62	47	42
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	3	7	4	5	3	8	1
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	56.0	56.0	31.0	73.0	20.0	56.0	53.0	31.0	20.0	17.0	14.0
Total Split (%)	8.8%	35.0%	35.0%	19.4%	45.6%	12.5%	35.0%	33.1%	19.4%	12.5%	10.6%	8.8%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	5.5	5.5	6.5	6.0	5.5	6.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	7.8	50.4	107.4	27.6	72.7	101.2	50.5	40.0	70.7	20.9	10.3	21.3
Actuated g/C Ratio	0.05	0.32	0.67	0.17	0.45	0.63	0.32	0.25	0.44	0.13	0.06	0.13
v/c Ratio	0.49	1.10	0.71	0.96	0.84	0.07	0.98	0.12	0.27	0.29	0.42	0.14
Control Delay	107.6	90.5	13.8	105.8	46.2	1.1	76.5	43.1	12.9	71.8	83.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.6	90.5	13.8	105.8	46.2	1.1	76.5	43.1	12.9	71.8	83.2	0.9
LOS	F	F	B	F	D	A	E	D	B	E	F	A
Approach Delay		61.1			54.4			65.4			55.4	
Approach LOS		E			D			E			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 59.8	Intersection LOS: E
Intersection Capacity Utilization 96.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	56.0	56.0	31.0	73.0	20.0	56.0	53.0	31.0	20.0	17.0	14.0
Total Split (%)	8.8%	35.0%	35.0%	19.4%	45.6%	12.5%	35.0%	33.1%	19.4%	12.5%	10.6%	8.8%
Maximum Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	13.3	50.5	47.7	25.0	13.3	10.5	8.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Max	Max
30th %ile Green (s)	8.3	49.5	50.5	25.3	66.5	11.6	50.5	49.1	25.3	11.6	10.2	8.3
30th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Gap	Max
10th %ile Green (s)	0.0	53.9	50.5	37.6	97.5	50.5	50.5	0.0	37.6	50.5	0.0	0.0
10th %ile Term Code	Skip	Coord	Max	Gap	Coord	Hold	Max	Skip	Gap	Hold	Skip	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1124	739	268	1243	65	976	51	185	62	47	42
Future Volume (veh/h)	39	1124	739	268	1243	65	976	51	185	62	47	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	1222	803	291	1351	71	1061	55	201	67	51	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1111	996	278	1553	769	1091	618	771	85	117	149
Arrive On Green	0.03	0.31	0.31	0.16	0.44	0.44	0.32	0.33	0.33	0.05	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	1222	803	291	1351	71	1061	55	201	67	51	46
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	50.0	50.0	25.0	55.2	3.9	48.5	3.2	11.9	6.0	4.2	4.3
Cycle Q Clear(g_c), s	3.7	50.0	50.0	25.0	55.2	3.9	48.5	3.2	11.9	6.0	4.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1111	996	278	1553	769	1091	618	771	85	117	149
V/C Ratio(X)	0.74	1.10	0.81	1.05	0.87	0.09	0.97	0.09	0.26	0.78	0.44	0.31
Avail Cap(c_a), veh/h	89	1111	996	278	1553	769	1091	618	771	161	123	154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.53	0.53	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.8	55.0	22.4	67.5	40.9	22.2	54.1	37.0	24.2	75.3	72.3	67.6
Incr Delay (d2), s/veh	13.5	53.2	3.8	66.3	6.9	0.2	21.1	0.1	0.4	27.6	5.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	30.2	23.3	16.4	25.1	1.5	24.3	1.5	4.7	3.4	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.3	108.2	26.2	133.8	47.8	22.5	75.1	37.1	24.5	103.0	77.7	70.1
LnGrp LOS	F	F	C	F	D	C	E	D	C	F	E	E
Approach Vol, veh/h		2067			1713			1317			164	
Approach Delay, s/veh		76.0			61.4			65.8			85.9	
Approach LOS		E			E			E			F	

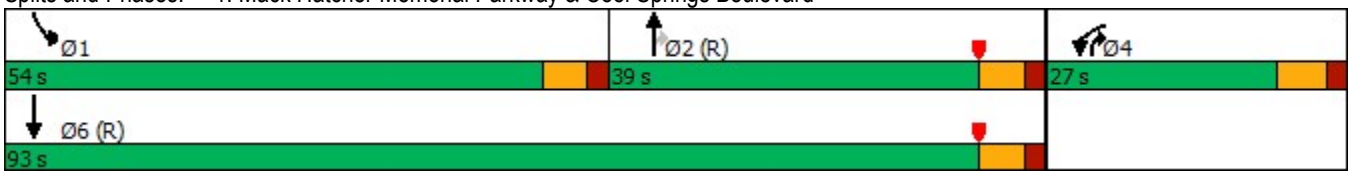
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	76.4	13.2	59.3	31.0	56.5	56.0	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	66.5	14.5	46.5	25.0	49.5	50.5	10.5
Max Q Clear Time (g_c+I1), s	5.7	57.2	8.0	13.9	27.0	52.0	50.5	6.3
Green Ext Time (p_c), s	0.0	7.7	0.1	2.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	69.0
HCM 6th LOS	E

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	290	945	502	649	1245	509
Future Volume (vph)	290	945	502	649	1245	509
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	20.5	120.0	33.0	53.0	48.0	87.0
Actuated g/C Ratio	0.17	1.00	0.28	0.44	0.40	0.72
v/c Ratio	0.54	0.64	0.54	0.96	0.94	0.21
Control Delay	34.0	11.0	39.5	55.3	49.4	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	11.0	39.5	55.3	49.4	5.6
LOS	C	B	D	E	D	A
Approach Delay	16.4		48.4			36.7
Approach LOS	B		D			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 33.9	Intersection LOS: C
Intersection Capacity Utilization 86.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Maximum Green (s)	20.5		33.0	20.5	48.0	87.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
10th %ile Term Code	Max		Coord	Max	Max	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	290	945	502	649	1245	509
Future Volume (veh/h)	290	945	502	649	1245	509
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	302	0	523	676	1297	530
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	498		1059	709	1375	2650
Arrive On Green	0.15	0.00	0.30	0.30	0.40	0.75
Sat Flow, veh/h	3319	1572	3647	1582	3456	3647
Grp Volume(v), veh/h	302	0	523	676	1297	530
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1582	1728	1777
Q Serve(g_s), s	10.2	0.0	14.5	35.8	43.4	5.3
Cycle Q Clear(g_c), s	10.2	0.0	14.5	35.8	43.4	5.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	498		1059	709	1375	2650
V/C Ratio(X)	0.61		0.49	0.95	0.94	0.20
Avail Cap(c_a), veh/h	567		1059	709	1382	2650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	34.7	28.2	34.8	4.6
Incr Delay (d2), s/veh	2.7	0.0	1.6	24.1	14.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	6.3	24.9	19.8	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.4	0.0	36.3	52.3	48.9	4.7
LnGrp LOS	D		D	D	D	A
Approach Vol, veh/h	302		1199			1827
Approach Delay, s/veh	50.4		45.3			36.1
Approach LOS	D		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	53.7	41.8		24.5		95.5
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	48.0	33.0		20.5		87.0
Max Q Clear Time (g_c+I1), s	45.4	37.8		12.2		7.3
Green Ext Time (p_c), s	2.3	0.0		1.3		7.6

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1861	6	15	1143	127	0	0	6	0	0	88
Future Vol, veh/h	0	1861	6	15	1143	127	0	0	6	0	0	88
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1959	6	16	1203	134	0	0	6	0	0	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1965	0	0	-	-	983	-	-	602
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	292	-	-	0	0	248	0	0	443
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	292	-	-	-	-	248	-	-	443
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

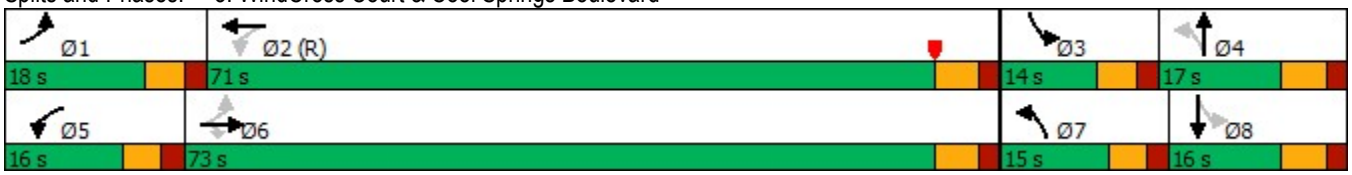
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	19.9	15.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	248	-	-	292	-	-	443
HCM Lane V/C Ratio	0.025	-	-	0.054	-	-	0.209
HCM Control Delay (s)	19.9	-	-	18	-	-	15.3
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	-	0.8

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	118	1662	92	204	1247	25	0	120	0
Future Volume (vph)	118	1662	92	204	1247	25	0	120	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	6	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	77.1	67.0	67.0	80.1	68.5	20.7	10.4	19.1	15.6
Actuated g/C Ratio	0.64	0.56	0.56	0.67	0.57	0.17	0.09	0.16	0.13
v/c Ratio	0.51	0.91	0.11	0.97	0.69	0.10	0.35	0.55	0.03
Control Delay	10.6	34.2	3.3	84.7	20.7	39.2	3.2	54.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	34.2	3.3	84.7	20.7	39.2	3.2	54.1	0.2
LOS	B	C	A	F	C	D	A	D	A
Approach Delay		31.2			29.5		10.6		48.9
Approach LOS		C			C		B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 85.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Maximum Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
90th %ile Term Code	Max	Coord	Coord	Max	Coord	Max	Hold	Max	Max
70th %ile Green (s)	10.1	67.0	67.0	10.5	67.4	9.5	11.0	8.5	10.0
70th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
50th %ile Green (s)	9.2	67.0	67.0	11.5	69.3	24.5	10.0	8.5	0.0
50th %ile Term Code	Gap	Coord	Coord	Max	Coord	Hold	Min	Max	Skip
30th %ile Green (s)	8.5	67.0	67.0	11.5	70.0	0.0	10.0	8.5	24.0
30th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold
10th %ile Green (s)	7.5	67.0	67.0	11.5	71.0	0.0	10.0	8.5	24.0
10th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	1662	92	204	1247	26	25	0	96	120	0	13
Future Volume (veh/h)	118	1662	92	204	1247	26	25	0	96	120	0	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1807	100	222	1355	28	27	0	104	130	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	2016	899	244	2156	45	246	0	131	210	0	181
Arrive On Green	0.05	0.57	0.57	0.09	0.61	0.61	0.04	0.00	0.08	0.07	0.00	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3560	74	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	128	1807	100	222	676	707	27	0	104	130	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1857	1781	0	1585	1781	0	1585
Q Serve(g_s), s	3.6	53.7	3.5	8.8	29.1	29.1	1.6	0.0	7.7	8.0	0.0	0.9
Cycle Q Clear(g_c), s	3.6	53.7	3.5	8.8	29.1	29.1	1.6	0.0	7.7	8.0	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	2016	899	244	1076	1125	246	0	131	210	0	181
V/C Ratio(X)	0.44	0.90	0.11	0.91	0.63	0.63	0.11	0.00	0.79	0.62	0.00	0.08
Avail Cap(c_a), veh/h	388	2016	899	244	1076	1125	317	0	145	210	0	181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	22.9	12.0	35.3	15.1	15.1	46.9	0.0	54.0	46.4	0.0	47.5
Incr Delay (d2), s/veh	1.5	6.1	0.1	28.8	2.1	2.0	0.4	0.0	28.2	7.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	22.1	1.3	8.4	11.4	11.8	0.8	0.0	4.1	4.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	28.9	12.1	64.1	17.2	17.1	47.4	0.0	82.2	54.4	0.0	47.9
LnGrp LOS	B	C	B	E	B	B	D	A	F	D	A	D
Approach Vol, veh/h		2035			1605			131			144	
Approach Delay, s/veh		27.2			23.6			75.0			53.7	
Approach LOS		C			C			E			D	

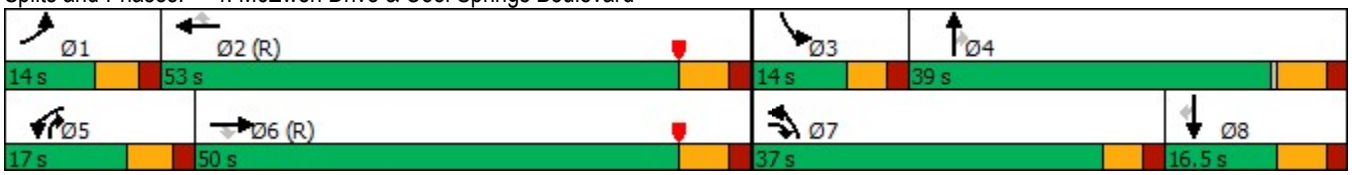
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	78.7	14.0	15.9	16.0	74.1	10.2	19.7
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	65.0	8.5	11.0	10.5	67.0	9.5	10.0
Max Q Clear Time (g_c+I1), s	5.6	31.1	10.0	9.7	10.8	55.7	3.6	2.9
Green Ext Time (p_c), s	0.2	21.5	0.0	0.1	0.0	10.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1036	819	97	906	43	536	34	232	58	45	35
Future Volume (vph)	26	1036	819	97	906	43	536	34	232	58	45	35
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	2	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	6.5	5.5	6.5	6.0	5.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	7.6	48.2	85.2	10.6	56.3	56.3	30.6	27.0	40.7	16.3	10.0	10.0
Actuated g/C Ratio	0.06	0.40	0.71	0.09	0.47	0.47	0.25	0.22	0.34	0.14	0.08	0.08
v/c Ratio	0.25	0.80	0.72	0.68	0.60	0.06	0.67	0.09	0.43	0.26	0.32	0.13
Control Delay	59.4	38.6	10.0	75.1	28.3	0.1	44.6	35.2	21.7	53.5	58.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	38.6	10.0	75.1	28.3	0.1	44.6	35.2	21.7	53.5	58.0	0.9
LOS	E	D	B	E	C	A	D	D	C	D	E	A
Approach Delay		26.4			31.5			37.6			41.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 120.5	
Actuated Cycle Length: 120.5	
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 30.7	Intersection LOS: C
Intersection Capacity Utilization 79.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Maximum Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	32.5	11.0	8.5	10.0	10.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
30th %ile Green (s)	0.0	43.5	31.5	11.0	60.5	60.5	31.5	0.0	11.0	48.0	10.0	10.0
30th %ile Term Code	Skip	Coord	Max	Max	Coord	Coord	Max	Skip	Max	Hold	Max	Max
10th %ile Green (s)	0.0	66.8	26.8	8.9	81.7	81.7	26.8	25.8	8.9	0.0	0.0	0.0
10th %ile Term Code	Skip	Coord	Gap	Gap	Coord	Coord	Gap	Hold	Gap	Skip	Skip	Skip

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 120.5
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1036	819	97	906	43	536	34	232	58	45	35
Future Volume (veh/h)	26	1036	819	97	906	43	536	34	232	58	45	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1126	890	105	985	47	583	37	252	63	49	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1544	1014	130	1695	756	709	430	480	104	156	132
Arrive On Green	0.03	0.43	0.43	0.07	0.48	0.48	0.21	0.23	0.23	0.06	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	28	1126	890	105	985	47	583	37	252	63	49	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	31.5	52.1	7.0	24.1	1.9	19.4	1.9	15.8	4.1	3.0	2.7
Cycle Q Clear(g_c), s	1.9	31.5	52.1	7.0	24.1	1.9	19.4	1.9	15.8	4.1	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1544	1014	130	1695	756	709	430	480	104	156	132
V/C Ratio(X)	0.52	0.73	0.88	0.81	0.58	0.06	0.82	0.09	0.52	0.60	0.31	0.29
Avail Cap(c_a), veh/h	119	1544	1014	163	1695	756	907	507	545	126	156	132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	28.1	17.8	54.8	22.7	16.9	45.6	36.3	34.7	55.1	51.8	51.7
Incr Delay (d2), s/veh	3.6	1.0	3.9	23.2	1.5	0.2	6.7	0.2	1.9	11.5	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	13.0	19.6	3.9	9.9	0.7	8.9	0.9	6.3	2.2	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.9	29.1	21.7	78.0	24.2	17.1	52.3	36.5	36.6	66.6	54.2	54.2
LnGrp LOS	E	C	C	E	C	B	D	D	D	E	D	D
Approach Vol, veh/h		2044			1137			872			150	
Approach Delay, s/veh		26.3			28.8			47.1			59.4	
Approach LOS		C			C			D			E	

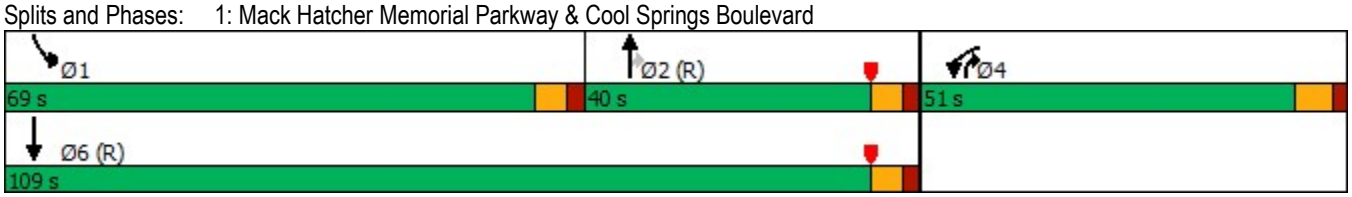
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	63.7	12.5	34.1	14.8	58.6	30.1	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	46.5	8.5	32.5	11.0	43.5	31.5	10.0
Max Q Clear Time (g_c+I1), s	3.9	26.1	6.1	17.8	9.0	54.1	21.4	5.0
Green Ext Time (p_c), s	0.0	11.5	0.0	1.9	0.1	0.0	3.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	741	1565	544	528	1074	511
Future Volume (vph)	741	1565	544	528	1074	511
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	43.5	160.0	35.9	85.4	62.1	104.0
Actuated g/C Ratio	0.27	1.00	0.22	0.53	0.39	0.65
v/c Ratio	0.84	1.05	0.73	0.66	0.86	0.24
Control Delay	57.2	54.9	64.4	30.5	52.5	12.0
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	57.2	54.9	64.4	31.1	52.5	12.0
LOS	E	D	E	C	D	B
Approach Delay	55.6		48.0			39.5
Approach LOS	E		D			D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 48.8	Intersection LOS: D
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Maximum Green (s)	44.5		34.0	44.5	63.0	103.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	39.7		43.3	39.7	58.5	107.8
10th %ile Term Code	Gap		Coord	Gap	Gap	Coord

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	741	1565	544	528	1074	511
Future Volume (veh/h)	741	1565	544	528	1074	511
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	788	0	579	562	1143	544
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	879		899	804	1303	2372
Arrive On Green	0.25	0.00	0.25	0.25	0.38	0.67
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	788	0	579	562	1143	544
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	35.2	0.0	23.3	40.5	49.3	9.6
Cycle Q Clear(g_c), s	35.2	0.0	23.3	40.5	49.3	9.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	879		899	804	1303	2372
V/C Ratio(X)	0.90		0.64	0.70	0.88	0.23
Avail Cap(c_a), veh/h	961		899	804	1361	2372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.6	0.0	53.3	29.4	46.4	10.4
Incr Delay (d2), s/veh	11.5	0.0	3.5	5.0	8.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.6	0.0	10.7	24.1	22.1	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.1	0.0	56.9	34.4	54.9	10.7
LnGrp LOS	E		E	C	D	B
Approach Vol, veh/h	788		1141			1687
Approach Delay, s/veh	69.1		45.8			40.7
Approach LOS	E		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	66.3	46.5		47.2		112.8
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	63.0	34.0		44.5		103.0
Max Q Clear Time (g_c+I1), s	51.3	42.5		37.2		11.6
Green Ext Time (p_c), s	9.1	0.0		3.4		7.9

Intersection Summary	
HCM 6th Ctrl Delay	48.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1614	6	11	2117	126	0	0	21	0	0	132
Future Vol, veh/h	0	1614	6	11	2117	126	0	0	21	0	0	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1699	6	12	2228	133	0	0	22	0	0	139

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1705	0	0	-	-	853	-	-	1114
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	369	-	-	0	0	302	0	0	203
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	369	-	-	-	-	302	-	-	203
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

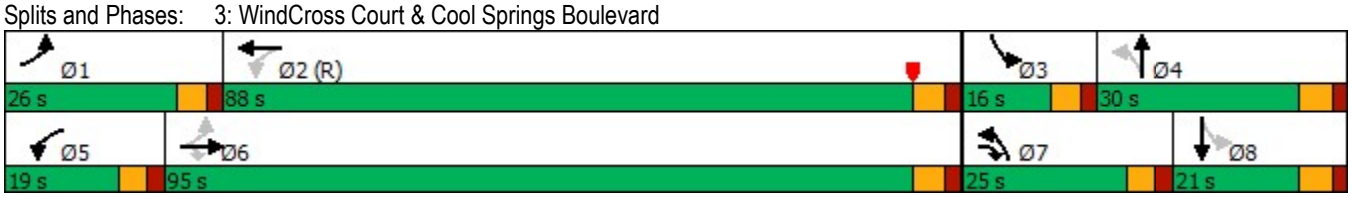
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	17.9	54.2
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	302	-	-	369	-	-	203
HCM Lane V/C Ratio	0.073	-	-	0.031	-	-	0.684
HCM Control Delay (s)	17.9	-	-	15.1	-	-	54.2
HCM Lane LOS	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	-	4.3

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	148	1512	19	132	2160	62	0	158	0
Future Volume (vph)	148	1512	19	132	2160	62	0	158	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	7	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	26.0	95.0	25.0	19.0	88.0	25.0	30.0	16.0	21.0
Total Split (%)	16.3%	59.4%	15.6%	11.9%	55.0%	15.6%	18.8%	10.0%	13.1%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	5.5	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	110.5	94.6	121.2	103.6	91.0	35.0	19.8	22.8	16.0
Actuated g/C Ratio	0.69	0.59	0.76	0.65	0.57	0.22	0.12	0.14	0.10
v/c Ratio	0.73	0.79	0.02	0.72	1.18	0.21	0.86	1.05	0.06
Control Delay	43.6	49.8	1.3	35.0	117.3	49.9	53.1	141.4	0.3
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	50.7	1.3	35.0	117.3	49.9	53.1	141.4	0.3
LOS	D	D	A	C	F	D	D	F	A
Approach Delay		49.5			112.6		52.5		124.2
Approach LOS		D			F		D		F

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 85.2	Intersection LOS: F
Intersection Capacity Utilization 113.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	26.0	95.0	25.0	19.0	88.0	25.0	30.0	16.0	21.0
Total Split (%)	16.3%	59.4%	15.6%	11.9%	55.0%	15.6%	18.8%	10.0%	13.1%
Maximum Green (s)	20.5	89.0	19.5	13.5	82.0	19.5	24.0	10.5	15.0
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	20.5	89.0	15.9	13.5	82.0	15.9	24.0	10.5	18.6
90th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
70th %ile Green (s)	19.1	89.0	13.6	13.5	83.4	13.6	24.0	10.5	20.9
70th %ile Term Code	Gap	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
50th %ile Green (s)	16.3	90.0	12.2	14.3	88.0	12.2	22.2	10.5	20.5
50th %ile Term Code	Gap	Coord	Gap	Gap	Coord	Gap	Gap	Max	Hold
30th %ile Green (s)	13.5	97.6	34.2	11.2	95.3	34.2	17.7	10.5	0.0
30th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip
10th %ile Green (s)	9.5	107.2	27.4	8.4	106.1	27.4	10.9	10.5	0.0
10th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	1512	19	132	2160	24	62	0	268	158	0	22
Future Volume (veh/h)	148	1512	19	132	2160	24	62	0	268	158	0	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	1643	21	143	2348	26	67	0	139	172	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	2285	1094	224	2191	24	273	0	164	183	0	193
Arrive On Green	0.08	0.64	0.64	0.04	0.61	0.61	0.05	0.00	0.10	0.07	0.00	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3600	40	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	161	1643	21	143	1157	1217	67	0	139	172	0	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1863	1781	0	1585	1781	0	1585
Q Serve(g_s), s	10.2	49.1	0.7	4.8	97.4	97.4	5.3	0.0	13.8	10.5	0.0	2.2
Cycle Q Clear(g_c), s	10.2	49.1	0.7	4.8	97.4	97.4	5.3	0.0	13.8	10.5	0.0	2.2
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	185	2285	1094	224	1082	1134	273	0	164	183	0	193
V/C Ratio(X)	0.87	0.72	0.02	0.64	1.07	1.07	0.25	0.00	0.85	0.94	0.00	0.12
Avail Cap(c_a), veh/h	273	2285	1094	296	1082	1134	405	0	238	183	0	193
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.30	0.30	0.30	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.8	19.0	7.8	21.9	31.3	31.3	59.9	0.0	70.5	65.0	0.0	62.7
Incr Delay (d2), s/veh	20.7	1.4	0.0	1.3	37.6	39.0	1.0	0.0	25.0	49.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	19.6	0.2	2.5	50.2	53.0	2.5	0.0	6.8	4.5	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.5	20.4	7.8	23.2	68.9	70.3	60.9	0.0	95.5	114.9	0.0	63.3
LnGrp LOS	E	C	A	C	F	F	E	A	F	F	A	E
Approach Vol, veh/h		1825			2517			206			196	
Approach Delay, s/veh		25.4			67.0			84.2			108.6	
Approach LOS		C			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.1	103.4	16.0	22.5	12.6	108.9	13.1	25.4
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	20.5	82.0	10.5	24.0	13.5	89.0	19.5	15.0
Max Q Clear Time (g_c+I1), s	12.2	99.4	12.5	15.8	6.8	51.1	7.3	4.2
Green Ext Time (p_c), s	0.4	0.0	0.0	0.7	0.3	28.6	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	53.4
HCM 6th LOS	D

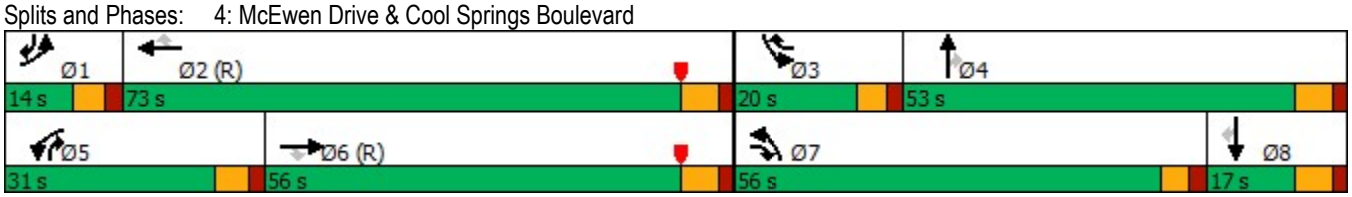
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1150	749	268	1282	65	992	51	185	62	47	42
Future Volume (vph)	39	1150	749	268	1282	65	992	51	185	62	47	42
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	3	7	4	5	3	8	1
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	56.0	56.0	31.0	73.0	20.0	56.0	53.0	31.0	20.0	17.0	14.0
Total Split (%)	8.8%	35.0%	35.0%	19.4%	45.6%	12.5%	35.0%	33.1%	19.4%	12.5%	10.6%	8.8%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	5.5	5.5	6.5	6.0	5.5	6.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	7.8	50.4	107.4	27.6	72.7	101.2	50.5	40.0	70.7	20.9	10.3	21.3
Actuated g/C Ratio	0.05	0.32	0.67	0.17	0.45	0.63	0.32	0.25	0.44	0.13	0.06	0.13
v/c Ratio	0.49	1.12	0.72	0.96	0.87	0.07	1.00	0.12	0.27	0.29	0.42	0.14
Control Delay	105.6	100.3	13.6	105.8	47.8	1.1	80.2	43.1	13.0	71.8	83.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.6	100.3	13.6	105.8	47.8	1.1	80.2	43.1	13.0	71.8	83.2	0.9
LOS	F	F	B	F	D	A	F	D	B	E	F	A
Approach Delay		66.9			55.5			68.5			55.4	
Approach LOS		E			E			E			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 63.2	Intersection LOS: E
Intersection Capacity Utilization 97.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	56.0	56.0	31.0	73.0	20.0	56.0	53.0	31.0	20.0	17.0	14.0
Total Split (%)	8.8%	35.0%	35.0%	19.4%	45.6%	12.5%	35.0%	33.1%	19.4%	12.5%	10.6%	8.8%
Maximum Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	13.3	50.5	47.7	25.0	13.3	10.5	8.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Max	Max
30th %ile Green (s)	8.3	49.5	50.5	25.3	66.5	11.6	50.5	49.1	25.3	11.6	10.2	8.3
30th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Gap	Max
10th %ile Green (s)	0.0	53.9	50.5	37.6	97.5	50.5	50.5	0.0	37.6	50.5	0.0	0.0
10th %ile Term Code	Skip	Coord	Max	Gap	Coord	Hold	Max	Skip	Gap	Hold	Skip	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1150	749	268	1282	65	992	51	185	62	47	42
Future Volume (veh/h)	39	1150	749	268	1282	65	992	51	185	62	47	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	1250	814	291	1393	71	1078	55	201	67	51	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1111	996	278	1553	769	1091	618	771	85	117	149
Arrive On Green	0.03	0.31	0.31	0.16	0.44	0.44	0.32	0.33	0.33	0.05	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	1250	814	291	1393	71	1078	55	201	67	51	46
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	50.0	50.0	25.0	58.1	3.9	49.6	3.2	11.9	6.0	4.2	4.3
Cycle Q Clear(g_c), s	3.7	50.0	50.0	25.0	58.1	3.9	49.6	3.2	11.9	6.0	4.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1111	996	278	1553	769	1091	618	771	85	117	149
V/C Ratio(X)	0.74	1.13	0.82	1.05	0.90	0.09	0.99	0.09	0.26	0.78	0.44	0.31
Avail Cap(c_a), veh/h	89	1111	996	278	1553	769	1091	618	771	161	123	154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.8	55.0	22.7	67.5	41.7	22.2	54.5	37.0	24.2	75.3	72.3	67.6
Incr Delay (d2), s/veh	12.4	62.8	3.7	66.3	8.5	0.2	24.4	0.1	0.4	27.6	5.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	31.7	23.8	16.4	26.7	1.5	25.3	1.5	4.7	3.4	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	89.2	117.8	26.5	133.8	50.2	22.5	78.9	37.1	24.5	103.0	77.7	70.1
LnGrp LOS	F	F	C	F	D	C	E	D	C	F	E	E
Approach Vol, veh/h		2106			1755			1334			164	
Approach Delay, s/veh		81.9			63.0			69.0			85.9	
Approach LOS		F			E			E			F	

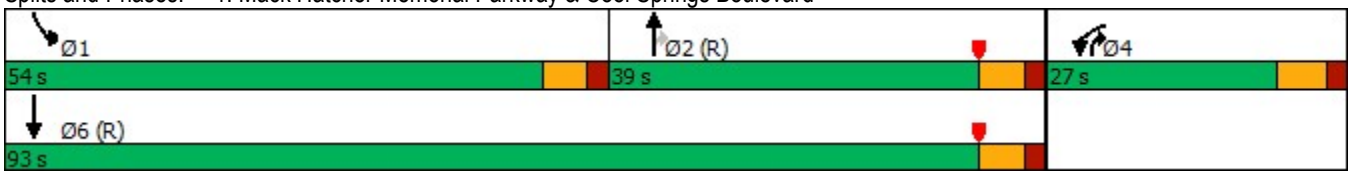
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	76.4	13.2	59.3	31.0	56.5	56.0	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	66.5	14.5	46.5	25.0	49.5	50.5	10.5
Max Q Clear Time (g_c+I1), s	5.7	60.1	8.0	13.9	27.0	52.0	51.6	6.3
Green Ext Time (p_c), s	0.0	5.6	0.1	2.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	72.6
HCM 6th LOS	E

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	297	1013	554	697	1343	563
Future Volume (vph)	297	1013	554	697	1343	563
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	20.5	120.0	33.0	53.0	48.0	87.0
Actuated g/C Ratio	0.17	1.00	0.28	0.44	0.40	0.72
v/c Ratio	0.55	0.68	0.59	1.04	1.02	0.23
Control Delay	35.0	13.1	40.7	74.6	65.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	13.1	40.7	74.6	65.1	5.7
LOS	C	B	D	E	E	A
Approach Delay	18.1		59.6			47.6
Approach LOS	B		E			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 42.3	Intersection LOS: D
Intersection Capacity Utilization 92.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Maximum Green (s)	20.5		33.0	20.5	48.0	87.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
10th %ile Term Code	Max		Coord	Max	Max	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	297	1013	554	697	1343	563
Future Volume (veh/h)	297	1013	554	697	1343	563
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	309	0	577	726	1399	586
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	498		1051	706	1382	2650
Arrive On Green	0.15	0.00	0.30	0.30	0.40	0.75
Sat Flow, veh/h	3319	1572	3647	1582	3456	3647
Grp Volume(v), veh/h	309	0	577	726	1399	586
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1582	1728	1777
Q Serve(g_s), s	10.5	0.0	16.4	35.5	48.0	6.0
Cycle Q Clear(g_c), s	10.5	0.0	16.4	35.5	48.0	6.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	498		1051	706	1382	2650
V/C Ratio(X)	0.62		0.55	1.03	1.01	0.22
Avail Cap(c_a), veh/h	567		1051	706	1382	2650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.8	0.0	35.5	28.3	36.0	4.6
Incr Delay (d2), s/veh	3.0	0.0	2.1	41.4	27.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	7.1	29.1	24.1	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.8	0.0	37.6	69.6	63.2	4.8
LnGrp LOS	D		D	F	F	A
Approach Vol, veh/h	309		1303			1985
Approach Delay, s/veh	50.8		55.4			46.0
Approach LOS	D		E			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	54.0	41.5		24.5		95.5
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	48.0	33.0		20.5		87.0
Max Q Clear Time (g_c+I1), s	50.0	37.5		12.5		8.0
Green Ext Time (p_c), s	0.0	0.0		1.3		8.7

Intersection Summary	
HCM 6th Ctrl Delay	49.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2001	6	15	1235	108	0	0	6	0	0	68
Future Vol, veh/h	0	2001	6	15	1235	108	0	0	6	0	0	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2106	6	16	1300	114	0	0	6	0	0	72

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2112	0	0	-	-	1056	-	-	650
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	256	-	-	0	0	222	0	0	412
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	256	-	-	-	-	222	-	-	412
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

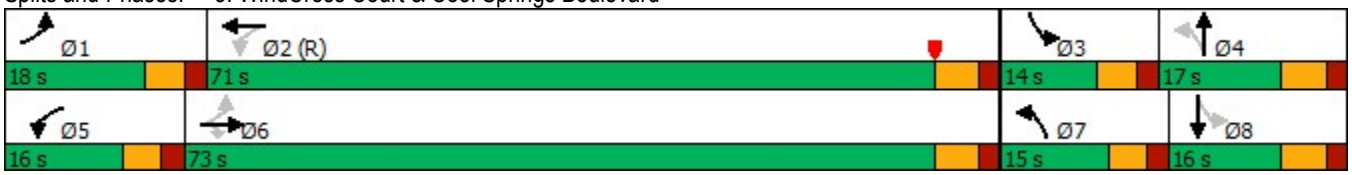
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	21.7	15.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	-	-	256	-	-	412
HCM Lane V/C Ratio	0.028	-	-	0.062	-	-	0.174
HCM Control Delay (s)	21.7	-	-	20	-	-	15.6
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	110	1802	101	225	1323	25	0	74	0
Future Volume (vph)	110	1802	101	225	1323	25	0	74	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	6	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	77.0	67.0	67.0	83.2	71.4	19.1	10.4	16.3	12.8
Actuated g/C Ratio	0.64	0.56	0.56	0.69	0.60	0.16	0.09	0.14	0.11
v/c Ratio	0.49	0.99	0.12	0.91	0.70	0.11	0.33	0.38	0.04
Control Delay	9.7	41.2	3.6	71.8	20.3	39.4	2.8	48.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	41.2	3.6	71.8	20.3	39.4	2.8	48.6	0.2
LOS	A	D	A	E	C	D	A	D	A
Approach Delay		37.5			27.7		10.3		41.4
Approach LOS		D			C		B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 32.7	Intersection LOS: C
Intersection Capacity Utilization 87.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Maximum Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
90th %ile Term Code	Max	Coord	Coord	Max	Coord	Max	Hold	Max	Max
70th %ile Green (s)	10.7	67.0	67.0	10.5	66.8	9.5	11.0	8.5	10.0
70th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
50th %ile Green (s)	9.0	67.0	67.0	11.5	69.5	24.5	10.0	8.5	0.0
50th %ile Term Code	Gap	Coord	Coord	Max	Coord	Hold	Min	Max	Skip
30th %ile Green (s)	8.3	67.0	67.0	11.5	70.2	0.0	10.0	8.5	24.0
30th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold
10th %ile Green (s)	7.0	67.1	67.1	25.4	85.5	0.0	10.0	0.0	10.0
10th %ile Term Code	Gap	Coord	Coord	Gap	Coord	Skip	Min	Skip	Hold

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1802	101	225	1323	26	25	0	96	74	0	13
Future Volume (veh/h)	110	1802	101	225	1323	26	25	0	96	74	0	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	1959	110	245	1438	28	27	0	104	80	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	275	2047	913	227	2191	43	246	0	131	194	0	167
Arrive On Green	0.05	0.58	0.58	0.09	0.61	0.61	0.04	0.00	0.08	0.06	0.00	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3565	69	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	120	1959	110	245	716	750	27	0	104	80	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1858	1781	0	1585	1781	0	1585
Q Serve(g_s), s	3.2	62.5	3.8	10.5	31.2	31.3	1.6	0.0	7.7	4.8	0.0	1.0
Cycle Q Clear(g_c), s	3.2	62.5	3.8	10.5	31.2	31.3	1.6	0.0	7.7	4.8	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	275	2047	913	227	1092	1142	246	0	131	194	0	167
V/C Ratio(X)	0.44	0.96	0.12	1.08	0.66	0.66	0.11	0.00	0.79	0.41	0.00	0.08
Avail Cap(c_a), veh/h	373	2047	913	227	1092	1142	317	0	145	210	0	167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.5	24.0	11.6	40.6	14.9	14.9	46.9	0.0	54.0	46.2	0.0	48.5
Incr Delay (d2), s/veh	1.5	11.6	0.1	73.1	2.2	2.1	0.4	0.0	28.2	3.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	26.9	1.4	11.3	12.1	12.6	0.8	0.0	4.1	2.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	35.6	11.7	113.7	17.1	17.1	47.4	0.0	82.2	49.2	0.0	48.9
LnGrp LOS	B	D	B	F	B	B	D	A	F	D	A	D
Approach Vol, veh/h		2189			1711			131			94	
Approach Delay, s/veh		33.3			30.9			75.0			49.2	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	79.7	12.9	15.9	16.0	75.1	10.2	18.6
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	65.0	8.5	11.0	10.5	67.0	9.5	10.0
Max Q Clear Time (g_c+I1), s	5.2	33.3	6.8	9.7	12.5	64.5	3.6	3.0
Green Ext Time (p_c), s	0.2	21.9	0.0	0.1	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	34.0
HCM 6th LOS	C

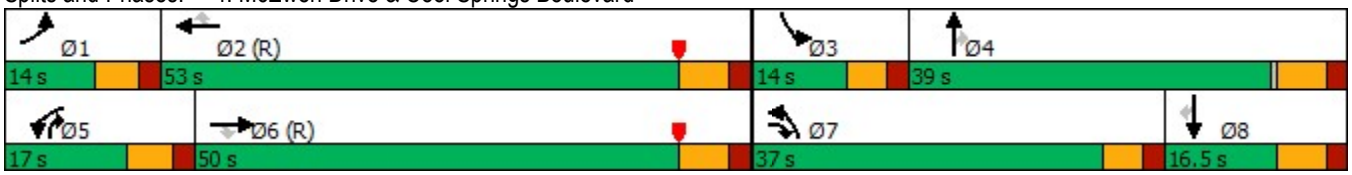
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1098	861	107	974	43	566	34	256	58	45	35
Future Volume (vph)	26	1098	861	107	974	43	566	34	256	58	45	35
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	2	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	6.5	5.5	6.5	6.0	5.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	7.6	47.7	85.1	10.7	56.0	56.0	30.9	27.3	41.2	16.3	10.0	10.0
Actuated g/C Ratio	0.06	0.40	0.71	0.09	0.46	0.46	0.26	0.23	0.34	0.14	0.08	0.08
v/c Ratio	0.25	0.85	0.76	0.74	0.64	0.06	0.70	0.09	0.47	0.26	0.32	0.13
Control Delay	59.4	41.8	12.0	80.4	29.6	0.1	45.4	35.2	23.4	53.5	58.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	41.8	12.0	80.4	29.6	0.1	45.4	35.2	23.4	53.5	58.0	0.9
LOS	E	D	B	F	C	A	D	D	C	D	E	A
Approach Delay		29.1			33.3			38.4			41.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 120.5	
Actuated Cycle Length: 120.5	
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 32.6	Intersection LOS: C
Intersection Capacity Utilization 82.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Maximum Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	32.5	11.0	8.5	10.0	10.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
30th %ile Green (s)	0.0	43.5	31.5	11.0	60.5	60.5	31.5	0.0	11.0	48.0	10.0	10.0
30th %ile Term Code	Skip	Coord	Max	Max	Coord	Coord	Max	Skip	Max	Hold	Max	Max
10th %ile Green (s)	0.0	64.3	28.5	9.7	80.0	80.0	28.5	27.5	9.7	0.0	0.0	0.0
10th %ile Term Code	Skip	Coord	Gap	Gap	Coord	Coord	Gap	Hold	Gap	Skip	Skip	Skip

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 120.5
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1098	861	107	974	43	566	34	256	58	45	35
Future Volume (veh/h)	26	1098	861	107	974	43	566	34	256	58	45	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1193	936	116	1059	47	615	37	278	63	49	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1490	1003	142	1665	743	738	446	504	104	156	132
Arrive On Green	0.03	0.42	0.42	0.08	0.47	0.47	0.21	0.24	0.24	0.06	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	28	1193	936	116	1059	47	615	37	278	63	49	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	35.2	50.3	7.7	27.1	1.9	20.4	1.8	17.4	4.1	3.0	2.7
Cycle Q Clear(g_c), s	1.9	35.2	50.3	7.7	27.1	1.9	20.4	1.8	17.4	4.1	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1490	1003	142	1665	743	738	446	504	104	156	132
V/C Ratio(X)	0.52	0.80	0.93	0.82	0.64	0.06	0.83	0.08	0.55	0.60	0.31	0.29
Avail Cap(c_a), veh/h	119	1490	1003	163	1665	743	907	507	555	126	156	132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.17	0.17	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	30.4	19.7	54.4	24.1	17.5	45.1	35.5	33.9	55.1	51.8	51.7
Incr Delay (d2), s/veh	1.9	0.8	3.8	26.1	1.9	0.2	7.3	0.2	2.0	11.5	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	14.5	22.4	4.4	11.3	0.8	9.5	0.9	7.0	2.2	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.2	31.3	23.5	80.5	26.0	17.6	52.4	35.7	35.9	66.6	54.2	54.2
LnGrp LOS	E	C	C	F	C	B	D	D	D	E	D	D
Approach Vol, veh/h		2157			1222			930			150	
Approach Delay, s/veh		28.3			30.9			46.8			59.4	
Approach LOS		C			C			D			E	

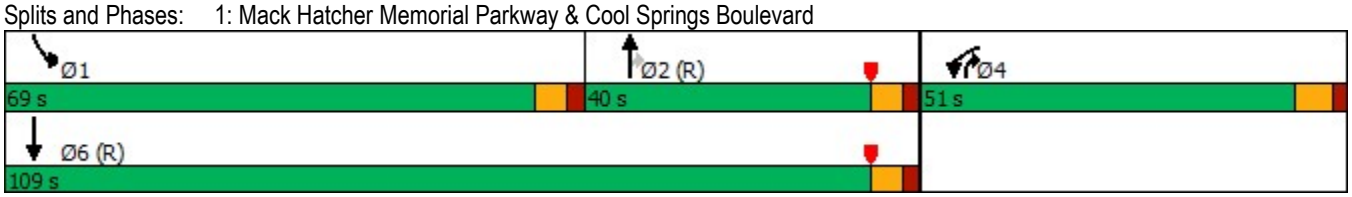
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	62.7	12.5	35.1	15.5	56.8	31.1	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	46.5	8.5	32.5	11.0	43.5	31.5	10.0
Max Q Clear Time (g_c+I1), s	3.9	29.1	6.1	19.4	9.7	52.3	22.4	5.0
Green Ext Time (p_c), s	0.0	11.0	0.0	2.0	0.0	0.0	3.2	0.2

Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	783	1680	601	554	1143	565
Future Volume (vph)	783	1680	601	554	1143	565
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	44.1	160.0	34.5	84.6	62.9	103.4
Actuated g/C Ratio	0.28	1.00	0.22	0.53	0.39	0.65
v/c Ratio	0.88	1.13	0.84	0.70	0.90	0.26
Control Delay	56.6	87.9	71.0	32.8	55.9	12.5
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0
Total Delay	56.6	87.9	71.0	34.4	55.9	12.5
LOS	E	F	E	C	E	B
Approach Delay	77.9		53.4			41.5
Approach LOS	E		D			D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 60.9	Intersection LOS: E
Intersection Capacity Utilization 87.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Maximum Green (s)	44.5		34.0	44.5	63.0	103.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	42.7		36.5	42.7	62.3	104.8
10th %ile Term Code	Gap		Coord	Gap	Gap	Coord

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	783	1680	601	554	1143	565
Future Volume (veh/h)	783	1680	601	554	1143	565
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	833	0	639	589	1216	601
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	910		835	790	1334	2340
Arrive On Green	0.26	0.00	0.24	0.24	0.39	0.66
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	833	0	639	589	1216	601
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	37.4	0.0	26.8	37.6	53.3	11.1
Cycle Q Clear(g_c), s	37.4	0.0	26.8	37.6	53.3	11.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	910		835	790	1334	2340
V/C Ratio(X)	0.92		0.76	0.75	0.91	0.26
Avail Cap(c_a), veh/h	961		835	790	1361	2340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.2	0.0	57.1	29.6	46.5	11.2
Incr Delay (d2), s/veh	13.5	0.0	6.6	6.3	10.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.8	0.0	12.6	25.5	24.3	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	70.7	0.0	63.7	35.9	57.5	11.5
LnGrp LOS	E		E	D	E	B
Approach Vol, veh/h	833		1228			1817
Approach Delay, s/veh	70.7		50.3			42.3
Approach LOS	E		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	67.7	43.6		48.6		111.4
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	63.0	34.0		44.5		103.0
Max Q Clear Time (g_c+I1), s	55.3	39.6		39.4		13.1
Green Ext Time (p_c), s	6.4	0.0		2.7		9.0

Intersection Summary	
HCM 6th Ctrl Delay	50.9
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1707	6	11	2284	71	0	0	21	0	0	116
Future Vol, veh/h	0	1707	6	11	2284	71	0	0	21	0	0	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1797	6	12	2404	75	0	0	22	0	0	122

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1803	0	0	-	-	902	-	-	1202
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	338	-	-	0	0	281	0	0	177
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	338	-	-	-	-	281	-	-	177
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

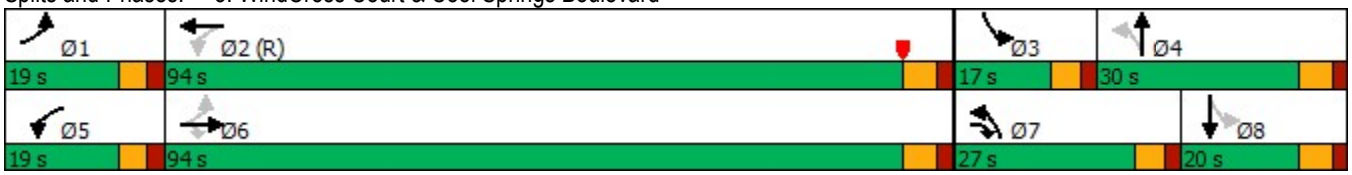
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	18.9	61.3
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	281	-	-	338	-	-	177
HCM Lane V/C Ratio	0.079	-	-	0.034	-	-	0.69
HCM Control Delay (s)	18.9	-	-	16	-	-	61.3
HCM Lane LOS	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	-	4.2

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	125	1613	40	124	2267	62	0	122	0
Future Volume (vph)	125	1613	40	124	2267	62	0	122	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	7	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	19.0	94.0	27.0	19.0	94.0	27.0	30.0	17.0	20.0
Total Split (%)	11.9%	58.8%	16.9%	11.9%	58.8%	16.9%	18.8%	10.6%	12.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	5.5	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	106.3	93.4	120.5	106.0	93.3	35.5	19.8	24.5	16.7
Actuated g/C Ratio	0.66	0.58	0.75	0.66	0.58	0.22	0.12	0.15	0.10
v/c Ratio	0.74	0.85	0.04	0.74	1.21	0.21	0.86	0.76	0.07
Control Delay	43.0	53.1	4.8	37.5	127.2	49.0	54.0	82.8	0.4
Queue Delay	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	55.1	4.8	37.5	127.2	49.0	54.0	82.8	0.4
LOS	D	E	A	D	F	D	D	F	A
Approach Delay		53.2			122.6		53.0		70.2
Approach LOS		D			F		D		E

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.21	
Intersection Signal Delay: 89.6	Intersection LOS: F
Intersection Capacity Utilization 112.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	19.0	94.0	27.0	19.0	94.0	27.0	30.0	17.0	20.0
Total Split (%)	11.9%	58.8%	16.9%	11.9%	58.8%	16.9%	18.8%	10.6%	12.5%
Maximum Green (s)	13.5	88.0	21.5	13.5	88.0	21.5	24.0	11.5	14.0
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	13.5	88.0	15.8	13.5	88.0	15.8	24.0	11.5	19.7
90th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
70th %ile Green (s)	13.5	88.0	13.6	13.5	88.0	13.6	24.0	11.5	21.9
70th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
50th %ile Green (s)	14.5	88.7	12.2	14.4	88.6	12.2	22.4	11.5	21.7
50th %ile Term Code	Gap	Coord	Gap	Gap	Coord	Gap	Gap	Max	Hold
30th %ile Green (s)	12.0	96.2	35.3	11.5	95.7	35.3	17.8	11.5	0.0
30th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip
10th %ile Green (s)	8.3	106.3	28.5	8.2	106.2	28.5	11.0	11.5	0.0
10th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	1613	40	124	2267	24	62	0	268	122	0	22
Future Volume (veh/h)	125	1613	40	124	2267	24	62	0	268	122	0	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	1753	43	135	2464	26	67	0	140	133	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	2269	1087	195	2223	23	274	0	165	194	0	203
Arrive On Green	0.06	0.64	0.64	0.04	0.62	0.62	0.05	0.00	0.10	0.07	0.00	0.13
Sat Flow, veh/h	1781	3554	1585	1781	3602	38	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	136	1753	43	135	1213	1277	67	0	140	133	0	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1864	1781	0	1585	1781	0	1585
Q Serve(g_s), s	8.0	56.3	1.4	4.5	98.7	98.7	5.3	0.0	13.9	10.6	0.0	2.1
Cycle Q Clear(g_c), s	8.0	56.3	1.4	4.5	98.7	98.7	5.3	0.0	13.9	10.6	0.0	2.1
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	2269	1087	195	1096	1150	274	0	165	194	0	203
V/C Ratio(X)	0.86	0.77	0.04	0.69	1.11	1.11	0.24	0.00	0.85	0.68	0.00	0.12
Avail Cap(c_a), veh/h	195	2269	1087	271	1096	1150	429	0	238	194	0	203
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.17	0.17	0.17	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.7	20.6	8.1	27.7	30.6	30.6	59.9	0.0	70.5	59.1	0.0	61.7
Incr Delay (d2), s/veh	28.3	2.0	0.0	1.1	50.6	52.2	1.0	0.0	25.1	12.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	22.6	0.5	3.2	54.6	57.8	2.5	0.0	6.9	5.5	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.0	22.6	8.1	28.8	81.2	82.9	60.8	0.0	95.6	71.3	0.0	62.3
LnGrp LOS	F	C	A	C	F	F	E	A	F	E	A	E
Approach Vol, veh/h		1932			2625			207			157	
Approach Delay, s/veh		26.6			79.3			84.3			69.9	
Approach LOS		C			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	104.7	17.0	22.6	12.2	108.1	13.1	26.5
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	13.5	88.0	11.5	24.0	13.5	88.0	21.5	14.0
Max Q Clear Time (g_c+I1), s	10.0	100.7	12.6	15.9	6.5	58.3	7.3	4.1
Green Ext Time (p_c), s	0.1	0.0	0.0	0.7	0.3	24.8	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	58.6
HCM 6th LOS	E

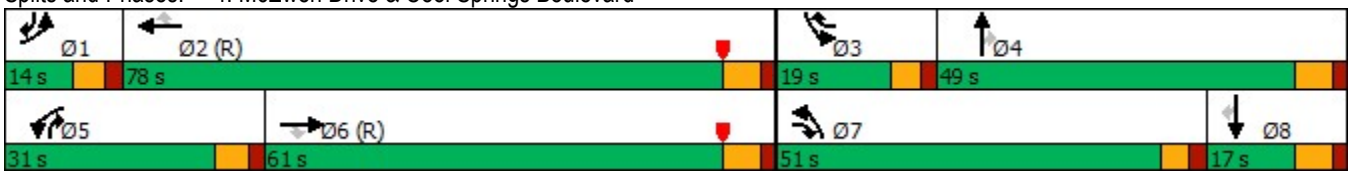
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1210	783	297	1341	65	1032	51	205	62	47	42
Future Volume (vph)	39	1210	783	297	1341	65	1032	51	205	62	47	42
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	3	7	4	5	3	8	1
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	61.0	51.0	31.0	78.0	19.0	51.0	49.0	31.0	19.0	17.0	14.0
Total Split (%)	8.8%	38.1%	31.9%	19.4%	48.8%	11.9%	31.9%	30.6%	19.4%	11.9%	10.6%	8.8%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	5.5	5.5	6.5	6.0	5.5	6.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	7.8	54.5	106.5	28.5	77.7	104.8	45.5	36.4	68.0	19.5	10.3	21.3
Actuated g/C Ratio	0.05	0.34	0.67	0.18	0.49	0.66	0.28	0.23	0.42	0.12	0.06	0.13
v/c Ratio	0.49	1.09	0.76	1.03	0.85	0.07	1.15	0.13	0.31	0.31	0.42	0.14
Control Delay	99.8	85.9	12.6	120.1	43.6	1.0	129.3	46.3	18.4	73.1	83.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.8	85.9	12.6	120.1	43.6	1.0	129.3	46.3	18.4	73.1	83.2	0.9
LOS	F	F	B	F	D	A	F	D	B	E	F	A
Approach Delay		57.9			55.3			108.3			56.0	
Approach LOS		E			E			F			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 69.6	Intersection LOS: E
Intersection Capacity Utilization 101.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	61.0	51.0	31.0	78.0	19.0	51.0	49.0	31.0	19.0	17.0	14.0
Total Split (%)	8.8%	38.1%	31.9%	19.4%	48.8%	11.9%	31.9%	30.6%	19.4%	11.9%	10.6%	8.8%
Maximum Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.3	45.5	42.7	25.0	13.3	10.5	8.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Max	Max
30th %ile Green (s)	8.3	54.5	45.5	25.3	71.5	11.6	45.5	44.1	25.3	11.6	10.2	8.3
30th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Gap	Max
10th %ile Green (s)	0.0	54.5	45.5	42.0	102.5	45.5	45.5	0.0	42.0	45.5	0.0	0.0
10th %ile Term Code	Skip	Coord	Max	Max	Coord	Hold	Max	Skip	Max	Hold	Skip	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1210	783	297	1341	65	1032	51	205	62	47	42
Future Volume (veh/h)	39	1210	783	297	1341	65	1032	51	205	62	47	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	1315	851	323	1458	71	1122	55	223	67	51	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1222	996	278	1664	818	983	559	722	85	117	149
Arrive On Green	0.03	0.34	0.34	0.16	0.47	0.47	0.28	0.30	0.30	0.05	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	1315	851	323	1458	71	1122	55	223	67	51	46
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	55.0	55.0	25.0	59.2	3.6	45.5	3.4	14.3	6.0	4.2	4.3
Cycle Q Clear(g_c), s	3.7	55.0	55.0	25.0	59.2	3.6	45.5	3.4	14.3	6.0	4.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1222	996	278	1664	818	983	559	722	85	117	149
V/C Ratio(X)	0.74	1.08	0.85	1.16	0.88	0.09	1.14	0.10	0.31	0.79	0.44	0.31
Avail Cap(c_a), veh/h	89	1222	996	278	1664	818	983	559	722	150	123	154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.43	0.43	0.43	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.8	52.5	23.9	67.5	38.4	19.6	57.3	40.5	27.6	75.4	72.3	67.6
Incr Delay (d2), s/veh	11.2	41.8	4.3	104.5	6.8	0.2	76.1	0.2	0.5	27.8	5.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	31.1	26.2	19.3	26.7	1.4	30.2	1.6	5.6	3.4	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.0	94.3	28.2	172.0	45.2	19.8	133.4	40.7	28.1	103.2	77.7	70.1
LnGrp LOS	F	F	C	F	D	B	F	D	C	F	E	E
Approach Vol, veh/h		2208			1852			1400			164	
Approach Delay, s/veh		68.7			66.3			113.0			86.0	
Approach LOS		E			E			F			F	

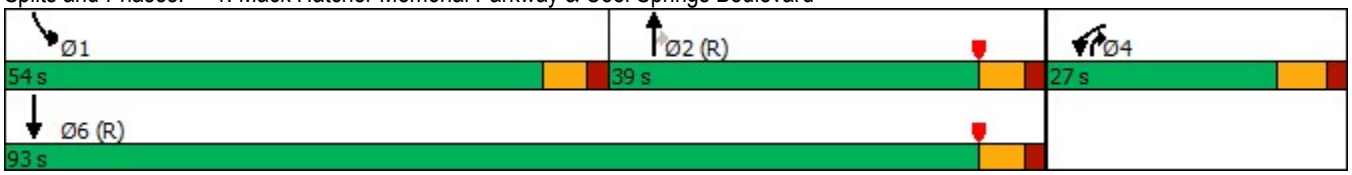
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	81.4	13.2	54.3	31.0	61.5	51.0	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	71.5	13.5	42.5	25.0	54.5	45.5	10.5
Max Q Clear Time (g_c+I1), s	5.7	61.2	8.0	16.3	27.0	57.0	47.5	6.3
Green Ext Time (p_c), s	0.0	8.8	0.1	2.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	79.4
HCM 6th LOS	E

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	307	1023	554	701	1347	563
Future Volume (vph)	307	1023	554	701	1347	563
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	20.5	120.0	33.0	53.0	48.0	87.0
Actuated g/C Ratio	0.17	1.00	0.28	0.44	0.40	0.72
v/c Ratio	0.57	0.69	0.59	1.05	1.02	0.23
Control Delay	35.2	13.4	40.7	76.3	65.9	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	13.4	40.7	76.3	65.9	5.7
LOS	D	B	D	E	E	A
Approach Delay	18.4		60.6			48.2
Approach LOS	B		E			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 42.8	Intersection LOS: D
Intersection Capacity Utilization 92.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Maximum Green (s)	20.5		33.0	20.5	48.0	87.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
10th %ile Term Code	Max		Coord	Max	Max	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	307	1023	554	701	1347	563
Future Volume (veh/h)	307	1023	554	701	1347	563
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	320	0	577	730	1403	586
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	498		1051	706	1382	2650
Arrive On Green	0.15	0.00	0.30	0.30	0.40	0.75
Sat Flow, veh/h	3319	1572	3647	1582	3456	3647
Grp Volume(v), veh/h	320	0	577	730	1403	586
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1582	1728	1777
Q Serve(g_s), s	10.9	0.0	16.4	35.5	48.0	6.0
Cycle Q Clear(g_c), s	10.9	0.0	16.4	35.5	48.0	6.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	498		1051	706	1382	2650
V/C Ratio(X)	0.64		0.55	1.03	1.01	0.22
Avail Cap(c_a), veh/h	567		1051	706	1382	2650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	35.5	28.3	36.0	4.6
Incr Delay (d2), s/veh	3.4	0.0	2.1	43.0	28.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	7.1	29.4	24.3	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	51.4	0.0	37.6	71.2	64.0	4.8
LnGrp LOS	D		D	F	F	A
Approach Vol, veh/h	320		1307			1989
Approach Delay, s/veh	51.4		56.4			46.6
Approach LOS	D		E			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	54.0	41.5		24.5		95.5
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	48.0	33.0		20.5		87.0
Max Q Clear Time (g_c+I1), s	50.0	37.5		12.9		8.0
Green Ext Time (p_c), s	0.0	0.0		1.3		8.7

Intersection Summary	
HCM 6th Ctrl Delay	50.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2009	6	15	1235	127	0	0	6	0	0	88
Future Vol, veh/h	0	2009	6	15	1235	127	0	0	6	0	0	88
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2115	6	16	1300	134	0	0	6	0	0	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2121	0	0	-	-	1061	-	-	650
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	254	-	-	0	0	220	0	0	412
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	254	-	-	-	-	220	-	-	412
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

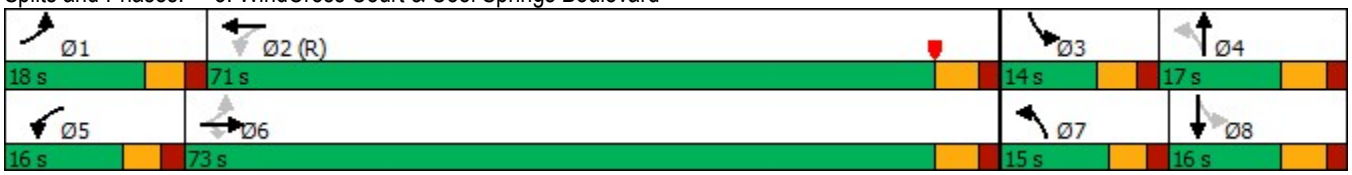
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	21.8	16.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	220	-	-	254	-	-	412
HCM Lane V/C Ratio	0.029	-	-	0.062	-	-	0.225
HCM Control Delay (s)	21.8	-	-	20.1	-	-	16.3
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	-	0.9

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	118	1802	101	225	1342	25	0	120	0
Future Volume (vph)	118	1802	101	225	1342	25	0	120	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	6	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	77.4	67.0	67.0	79.8	68.2	20.7	10.4	19.1	15.6
Actuated g/C Ratio	0.64	0.56	0.56	0.66	0.57	0.17	0.09	0.16	0.13
v/c Ratio	0.56	0.99	0.12	1.07	0.74	0.10	0.35	0.55	0.03
Control Delay	14.1	41.0	3.6	111.4	22.6	39.2	3.5	54.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	41.0	3.6	111.4	22.6	39.2	3.5	54.1	0.2
LOS	B	D	A	F	C	D	A	D	A
Approach Delay		37.6			35.2		10.8		48.9
Approach LOS		D			D		B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 36.2	Intersection LOS: D
Intersection Capacity Utilization 90.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Maximum Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
90th %ile Term Code	Max	Coord	Coord	Max	Coord	Max	Hold	Max	Max
70th %ile Green (s)	11.7	67.0	67.0	10.5	65.8	9.5	11.0	8.5	10.0
70th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
50th %ile Green (s)	9.5	67.0	67.0	11.5	69.0	24.5	10.0	8.5	0.0
50th %ile Term Code	Gap	Coord	Coord	Max	Coord	Hold	Min	Max	Skip
30th %ile Green (s)	8.5	67.0	67.0	11.5	70.0	0.0	10.0	8.5	24.0
30th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold
10th %ile Green (s)	7.5	67.0	67.0	11.5	71.0	0.0	10.0	8.5	24.0
10th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	1802	101	225	1342	26	25	0	96	120	0	13
Future Volume (veh/h)	118	1802	101	225	1342	26	25	0	96	120	0	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1959	110	245	1459	28	27	0	104	130	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	2016	899	223	2160	41	246	0	131	210	0	181
Arrive On Green	0.05	0.57	0.57	0.09	0.61	0.61	0.04	0.00	0.08	0.07	0.00	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3567	68	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	128	1959	110	245	726	761	27	0	104	130	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1858	1781	0	1585	1781	0	1585
Q Serve(g_s), s	3.6	63.8	3.9	10.5	32.7	32.8	1.6	0.0	7.7	8.0	0.0	0.9
Cycle Q Clear(g_c), s	3.6	63.8	3.9	10.5	32.7	32.8	1.6	0.0	7.7	8.0	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	2016	899	223	1076	1125	246	0	131	210	0	181
V/C Ratio(X)	0.48	0.97	0.12	1.10	0.67	0.68	0.11	0.00	0.79	0.62	0.00	0.08
Avail Cap(c_a), veh/h	363	2016	899	223	1076	1125	317	0	145	210	0	181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	25.0	12.1	40.9	15.8	15.8	46.9	0.0	54.0	46.4	0.0	47.5
Incr Delay (d2), s/veh	1.9	14.1	0.1	79.4	2.4	2.3	0.4	0.0	28.2	7.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	28.2	1.4	11.5	12.8	13.4	0.8	0.0	4.1	4.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	39.1	12.2	120.3	18.2	18.1	47.4	0.0	82.2	54.4	0.0	47.9
LnGrp LOS	B	D	B	F	B	B	D	A	F	D	A	D
Approach Vol, veh/h		2197			1732			131			144	
Approach Delay, s/veh		36.5			32.6			75.0			53.7	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	78.7	14.0	15.9	16.0	74.1	10.2	19.7
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	65.0	8.5	11.0	10.5	67.0	9.5	10.0
Max Q Clear Time (g_c+I1), s	5.6	34.8	10.0	9.7	12.5	65.8	3.6	2.9
Green Ext Time (p_c), s	0.2	21.5	0.0	0.1	0.0	1.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	36.7
HCM 6th LOS	D

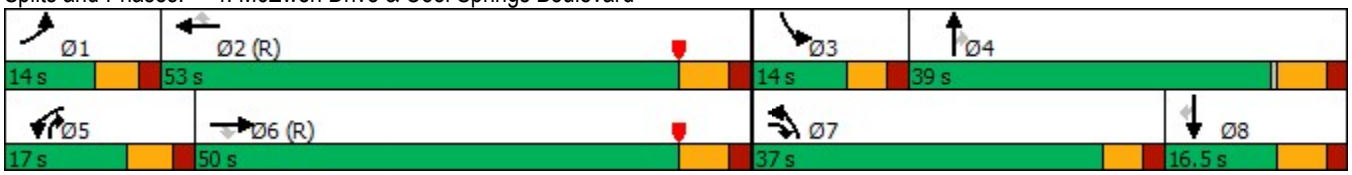
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1131	874	107	988	43	571	34	256	58	45	35
Future Volume (vph)	26	1131	874	107	988	43	571	34	256	58	45	35
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	2	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	6.5	5.5	6.5	6.0	5.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	7.6	47.6	85.1	10.7	56.0	56.0	30.9	27.3	41.3	16.3	10.0	10.0
Actuated g/C Ratio	0.06	0.40	0.71	0.09	0.46	0.46	0.26	0.23	0.34	0.14	0.08	0.08
v/c Ratio	0.25	0.88	0.77	0.74	0.65	0.06	0.71	0.09	0.47	0.26	0.32	0.13
Control Delay	59.4	43.6	12.6	80.4	29.8	0.1	45.6	35.2	23.4	53.5	58.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	43.6	12.6	80.4	29.8	0.1	45.6	35.2	23.4	53.5	58.0	0.9
LOS	E	D	B	F	C	A	D	D	C	D	E	A
Approach Delay		30.5			33.5			38.6			41.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 120.5	
Actuated Cycle Length: 120.5	
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 33.3	Intersection LOS: C
Intersection Capacity Utilization 83.4%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Maximum Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	32.5	11.0	8.5	10.0	10.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
30th %ile Green (s)	0.0	43.5	31.5	11.0	60.5	60.5	31.5	0.0	11.0	48.0	10.0	10.0
30th %ile Term Code	Skip	Coord	Max	Max	Coord	Coord	Max	Skip	Max	Hold	Max	Max
10th %ile Green (s)	0.0	64.2	28.6	9.7	79.9	79.9	28.6	27.6	9.7	0.0	0.0	0.0
10th %ile Term Code	Skip	Coord	Gap	Gap	Coord	Coord	Gap	Hold	Gap	Skip	Skip	Skip

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 120.5
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1131	874	107	988	43	571	34	256	58	45	35
Future Volume (veh/h)	26	1131	874	107	988	43	571	34	256	58	45	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1229	950	116	1074	47	621	37	278	63	49	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1485	1003	142	1660	740	744	449	506	104	156	132
Arrive On Green	0.03	0.42	0.42	0.08	0.47	0.47	0.22	0.24	0.24	0.06	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	28	1229	950	116	1074	47	621	37	278	63	49	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	36.9	50.1	7.7	27.7	2.0	20.6	1.8	17.4	4.1	3.0	2.7
Cycle Q Clear(g_c), s	1.9	36.9	50.1	7.7	27.7	2.0	20.6	1.8	17.4	4.1	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1485	1003	142	1660	740	744	449	506	104	156	132
V/C Ratio(X)	0.52	0.83	0.95	0.82	0.65	0.06	0.84	0.08	0.55	0.60	0.31	0.29
Avail Cap(c_a), veh/h	119	1485	1003	163	1660	740	907	507	555	126	156	132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.17	0.17	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	31.1	20.2	54.4	24.4	17.6	45.1	35.4	33.7	55.1	51.8	51.7
Incr Delay (d2), s/veh	1.9	1.0	4.6	26.1	2.0	0.2	7.4	0.2	2.0	11.5	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	15.3	23.4	4.4	11.6	0.8	9.6	0.9	6.9	2.2	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.2	32.1	24.7	80.5	26.4	17.7	52.4	35.5	35.7	66.6	54.2	54.2
LnGrp LOS	E	C	C	F	C	B	D	D	D	E	D	D
Approach Vol, veh/h		2207			1237			936			150	
Approach Delay, s/veh		29.2			31.1			46.8			59.4	
Approach LOS		C			C			D			E	

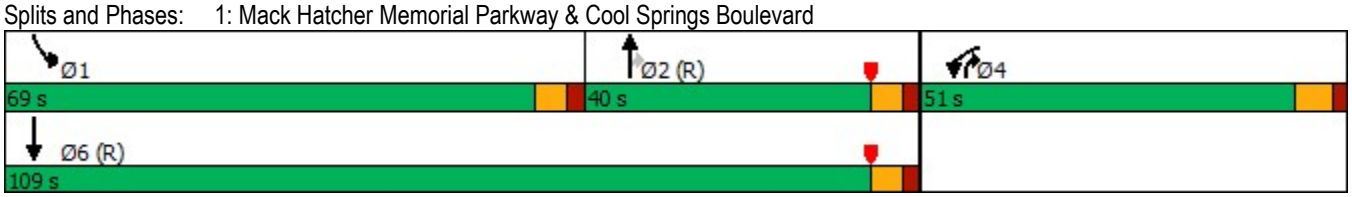
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	62.5	12.5	35.3	15.5	56.6	31.3	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	46.5	8.5	32.5	11.0	43.5	31.5	10.0
Max Q Clear Time (g_c+I1), s	3.9	29.7	6.1	19.4	9.7	52.1	22.6	5.0
Green Ext Time (p_c), s	0.0	10.8	0.0	2.0	0.0	0.0	3.2	0.2

Intersection Summary	
HCM 6th Ctrl Delay	34.4
HCM 6th LOS	C

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	791	1688	601	566	1155	565
Future Volume (vph)	791	1688	601	566	1155	565
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	44.2	160.0	34.3	84.5	63.0	103.3
Actuated g/C Ratio	0.28	1.00	0.21	0.53	0.39	0.65
v/c Ratio	0.89	1.13	0.84	0.71	0.91	0.26
Control Delay	57.4	90.5	71.5	33.7	56.6	12.5
Queue Delay	0.0	0.0	0.0	1.8	0.0	0.0
Total Delay	57.4	90.5	71.5	35.5	56.6	12.5
LOS	E	F	E	D	E	B
Approach Delay	79.9		54.0			42.1
Approach LOS	E		D			D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 62.2	Intersection LOS: E
Intersection Capacity Utilization 87.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Maximum Green (s)	44.5		34.0	44.5	63.0	103.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	43.1		35.4	43.1	63.0	104.4
10th %ile Term Code	Gap		Coord	Gap	Max	Coord

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	791	1688	601	566	1155	565
Future Volume (veh/h)	791	1688	601	566	1155	565
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	841	0	639	602	1229	601
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	915		825	788	1338	2335
Arrive On Green	0.26	0.00	0.23	0.23	0.39	0.66
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	841	0	639	602	1229	601
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	37.8	0.0	26.9	37.2	54.1	11.2
Cycle Q Clear(g_c), s	37.8	0.0	26.9	37.2	54.1	11.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	915		825	788	1338	2335
V/C Ratio(X)	0.92		0.77	0.76	0.92	0.26
Avail Cap(c_a), veh/h	961		825	788	1361	2335
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	0.0	57.5	29.6	46.6	11.3
Incr Delay (d2), s/veh	13.9	0.0	7.0	6.9	11.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.1	0.0	12.7	26.1	24.7	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	71.1	0.0	64.5	36.5	58.2	11.6
LnGrp LOS	E		E	D	E	B
Approach Vol, veh/h	841		1241			1830
Approach Delay, s/veh	71.1		50.9			42.9
Approach LOS	E		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	67.9	43.2		48.9		111.1
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	63.0	34.0		44.5		103.0
Max Q Clear Time (g_c+I1), s	56.1	39.2		39.8		13.2
Green Ext Time (p_c), s	5.8	0.0		2.6		9.0

Intersection Summary	
HCM 6th Ctrl Delay	51.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1730	6	11	2284	126	0	0	21	0	0	132
Future Vol, veh/h	0	1730	6	11	2284	126	0	0	21	0	0	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1821	6	12	2404	133	0	0	22	0	0	139

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1827	0	0	-	-	914	-	-	1202
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	331	-	-	0	0	276	0	0	177
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	331	-	-	-	-	276	-	-	177
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

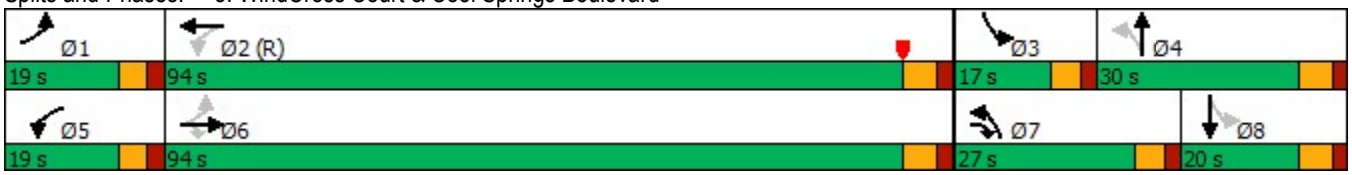
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	19.2	74.6
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	276	-	-	331	-	-	177
HCM Lane V/C Ratio	0.08	-	-	0.035	-	-	0.785
HCM Control Delay (s)	19.2	-	-	16.3	-	-	74.6
HCM Lane LOS	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	-	5.2

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	148	1613	40	124	2322	62	0	158	0
Future Volume (vph)	148	1613	40	124	2322	62	0	158	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	7	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	19.0	94.0	27.0	19.0	94.0	27.0	30.0	17.0	20.0
Total Split (%)	11.9%	58.8%	16.9%	11.9%	58.8%	16.9%	18.8%	10.6%	12.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	5.5	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	106.7	92.8	120.3	104.4	91.7	36.0	20.4	24.7	16.9
Actuated g/C Ratio	0.67	0.58	0.75	0.65	0.57	0.22	0.13	0.15	0.11
v/c Ratio	0.83	0.85	0.04	0.74	1.26	0.21	0.87	0.99	0.07
Control Delay	52.3	53.3	4.8	36.5	150.2	48.7	56.3	123.4	0.4
Queue Delay	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	55.5	4.8	36.5	150.2	48.7	56.3	123.4	0.4
LOS	D	E	A	D	F	D	E	F	A
Approach Delay		54.1			144.4		54.9		108.3
Approach LOS		D			F		D		F

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.26	
Intersection Signal Delay: 102.9	Intersection LOS: F
Intersection Capacity Utilization 117.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	19.0	94.0	27.0	19.0	94.0	27.0	30.0	17.0	20.0
Total Split (%)	11.9%	58.8%	16.9%	11.9%	58.8%	16.9%	18.8%	10.6%	12.5%
Maximum Green (s)	13.5	88.0	21.5	13.5	88.0	21.5	24.0	11.5	14.0
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	13.5	88.0	15.8	13.5	88.0	15.8	24.0	11.5	19.7
90th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
70th %ile Green (s)	13.5	88.0	13.6	13.5	88.0	13.6	24.0	11.5	21.9
70th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
50th %ile Green (s)	14.2	88.0	12.1	14.2	88.0	12.1	23.3	11.5	22.7
50th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Gap	Max	Hold
30th %ile Green (s)	14.8	95.0	36.3	11.7	91.9	36.3	18.8	11.5	0.0
30th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip
10th %ile Green (s)	10.9	105.2	29.6	8.2	102.5	29.6	12.1	11.5	0.0
10th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	1613	40	124	2322	24	62	0	268	158	0	22
Future Volume (veh/h)	148	1613	40	124	2322	24	62	0	268	158	0	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	1753	43	135	2524	26	67	0	149	172	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	2244	1076	194	2155	22	281	0	174	194	0	212
Arrive On Green	0.08	0.63	0.63	0.04	0.60	0.60	0.05	0.00	0.11	0.07	0.00	0.13
Sat Flow, veh/h	1781	3554	1585	1781	3603	37	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	161	1753	43	135	1242	1308	67	0	149	172	0	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1864	1781	0	1585	1781	0	1585
Q Serve(g_s), s	10.2	57.4	1.4	4.7	95.7	95.7	5.3	0.0	14.8	11.5	0.0	2.1
Cycle Q Clear(g_c), s	10.2	57.4	1.4	4.7	95.7	95.7	5.3	0.0	14.8	11.5	0.0	2.1
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	182	2244	1076	194	1063	1115	281	0	174	194	0	212
V/C Ratio(X)	0.88	0.78	0.04	0.70	1.17	1.17	0.24	0.00	0.86	0.89	0.00	0.11
Avail Cap(c_a), veh/h	195	2244	1076	267	1063	1115	436	0	238	194	0	212
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.13	0.13	0.13	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	21.4	8.5	28.2	32.2	32.2	59.1	0.0	70.0	62.2	0.0	60.9
Incr Delay (d2), s/veh	34.6	2.1	0.0	0.9	77.6	79.4	0.9	0.0	26.6	36.8	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	23.2	0.5	3.1	61.4	64.9	2.5	0.0	7.3	3.4	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.0	23.6	8.5	29.0	109.8	111.5	60.0	0.0	96.6	99.0	0.0	61.4
LnGrp LOS	F	C	A	C	F	F	E	A	F	F	A	E
Approach Vol, veh/h		1957			2685			216			196	
Approach Delay, s/veh		28.9			106.6			85.3			94.4	
Approach LOS		C			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.8	101.7	17.0	23.5	12.4	107.0	13.1	27.4
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	13.5	88.0	11.5	24.0	13.5	88.0	21.5	14.0
Max Q Clear Time (g_c+I1), s	12.2	97.7	13.5	16.8	6.7	59.4	7.3	4.1
Green Ext Time (p_c), s	0.1	0.0	0.0	0.7	0.3	24.0	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	75.1
HCM 6th LOS	E

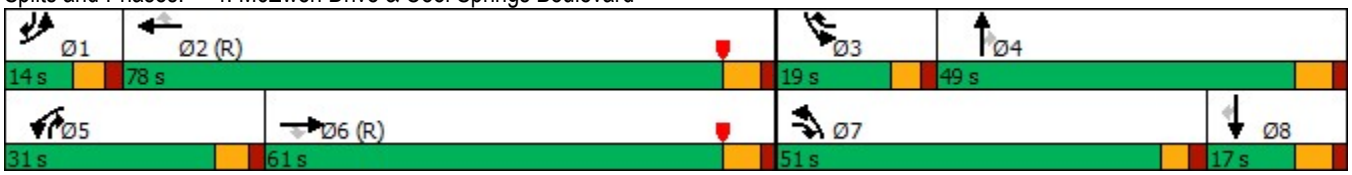
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1236	793	297	1380	65	1048	51	205	62	47	42
Future Volume (vph)	39	1236	793	297	1380	65	1048	51	205	62	47	42
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	3	7	4	5	3	8	1
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	61.0	51.0	31.0	78.0	19.0	51.0	49.0	31.0	19.0	17.0	14.0
Total Split (%)	8.8%	38.1%	31.9%	19.4%	48.8%	11.9%	31.9%	30.6%	19.4%	11.9%	10.6%	8.8%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	5.5	5.5	6.5	6.0	5.5	6.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	7.8	54.5	106.5	28.5	77.7	104.8	45.5	36.4	68.0	19.5	10.3	21.3
Actuated g/C Ratio	0.05	0.34	0.67	0.18	0.49	0.66	0.28	0.23	0.42	0.12	0.06	0.13
v/c Ratio	0.49	1.11	0.77	1.03	0.87	0.07	1.17	0.13	0.31	0.31	0.42	0.14
Control Delay	98.3	95.0	12.8	120.1	45.3	1.0	135.6	46.3	18.6	73.1	83.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.3	95.0	12.8	120.1	45.3	1.0	135.6	46.3	18.6	73.1	83.2	0.9
LOS	F	F	B	F	D	A	F	D	B	E	F	A
Approach Delay		63.5			56.4			113.7			56.0	
Approach LOS		E			E			F			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 73.4	Intersection LOS: E
Intersection Capacity Utilization 103.0%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	61.0	51.0	31.0	78.0	19.0	51.0	49.0	31.0	19.0	17.0	14.0
Total Split (%)	8.8%	38.1%	31.9%	19.4%	48.8%	11.9%	31.9%	30.6%	19.4%	11.9%	10.6%	8.8%
Maximum Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.3	45.5	42.7	25.0	13.3	10.5	8.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Max	Max
30th %ile Green (s)	8.3	54.5	45.5	25.3	71.5	11.6	45.5	44.1	25.3	11.6	10.2	8.3
30th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Gap	Max
10th %ile Green (s)	0.0	54.5	45.5	42.0	102.5	45.5	45.5	0.0	42.0	45.5	0.0	0.0
10th %ile Term Code	Skip	Coord	Max	Max	Coord	Hold	Max	Skip	Max	Hold	Skip	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1236	793	297	1380	65	1048	51	205	62	47	42
Future Volume (veh/h)	39	1236	793	297	1380	65	1048	51	205	62	47	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	1343	862	323	1500	71	1139	55	223	67	51	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1222	996	278	1664	818	983	559	722	85	117	149
Arrive On Green	0.03	0.34	0.34	0.16	0.47	0.47	0.28	0.30	0.30	0.05	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	1343	862	323	1500	71	1139	55	223	67	51	46
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	55.0	55.0	25.0	62.1	3.6	45.5	3.4	14.3	6.0	4.2	4.3
Cycle Q Clear(g_c), s	3.7	55.0	55.0	25.0	62.1	3.6	45.5	3.4	14.3	6.0	4.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1222	996	278	1664	818	983	559	722	85	117	149
V/C Ratio(X)	0.74	1.10	0.87	1.16	0.90	0.09	1.16	0.10	0.31	0.79	0.44	0.31
Avail Cap(c_a), veh/h	89	1222	996	278	1664	818	983	559	722	150	123	154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.38	0.38	0.38	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.8	52.5	24.3	67.5	39.1	19.6	57.3	40.5	27.6	75.4	72.3	67.6
Incr Delay (d2), s/veh	10.0	50.2	4.1	104.5	8.3	0.2	83.1	0.2	0.5	27.8	5.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	32.5	26.9	19.3	28.3	1.4	31.2	1.6	5.6	3.4	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.8	102.7	28.4	172.0	47.5	19.8	140.3	40.7	28.1	103.2	77.7	70.1
LnGrp LOS	F	F	C	F	D	B	F	D	C	F	E	E
Approach Vol, veh/h		2247			1894			1417			164	
Approach Delay, s/veh		73.9			67.7			118.8			86.0	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	81.4	13.2	54.3	31.0	61.5	51.0	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	71.5	13.5	42.5	25.0	54.5	45.5	10.5
Max Q Clear Time (g_c+I1), s	5.7	64.1	8.0	16.3	27.0	57.0	47.5	6.3
Green Ext Time (p_c), s	0.0	6.6	0.1	2.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	83.3
HCM 6th LOS	F

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04662

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Amy Diaz-Barriga, Asst Director of Planning Development
Chelsea Randolph, Principal Planner

SUBJECT:

Consideration Of Resolution 2023-42, A Resolution Approving A Development Plan For 101 Cool Springs Boulevard PUD Subdivision, For The Property Located East Of Mack Hatcher Memorial Parkway And North Of Cool Springs Boulevard.
FMPC 5/25, Deferred 6-0

PURPOSE:

PROJECT INFORMATION
COF Project Number: 8157
Applicant: Greg Gamble, Gamble Design Collaborative
Owner: Mitchell Rechler, CSLP GP

BACKGROUND/STAFF COMMENTS:
UPDATE
The applicant requested deferral at the May 25, 2023 FMPC meeting for consideration at the June 22, 2023 FMPC, and the development plan/submittal package has not changed.

PREVIOUS STAFF REPORT
101 Cool Springs Boulevard PUD Subdivision is approximately 3 acres in size and is located east of Mack Hatcher Memorial Parkway and north of Cool Springs Boulevard on a property addressed as 101 Cool Springs Boulevard. The proposed development consists of 178 multi-family units and 3,362 SF of commercial space. Envision Franklin places this property in the Regional Commerce Design Concept, which states that the area, "contains high-intensity activity centers that attract large numbers of people and employers from both within and outside the City. These areas include major employment and revenue generators that are valuable community resources."

Envision Franklin further states that, "New developments [within Regional Commercial] should have integrated designs with coordinated access, amenities, and cohesive architecture that fits within the context of the corridor," and that, "Buildings should be arranged on sites so that they help to frame and define the streets, giving deliberate form to streets and sidewalk areas. Building setbacks should be minimal to create an active street environment that encourages pedestrian activity. Where internal drives are used to organize buildings and pedestrian movement, setbacks to internal drives should

be minimized wherever possible."

The proposed development meets the minimum recommendations of Envision Franklin by providing a mix of uses that include commercial and multi-family residential, although the amount of activated ground-floor commercial use is very minimal, like approved developments nearby. The site layout provides an urban feel with building-lined streets creating a walkable development and provides architecture that fits in with the style of the corridor. The Regional Commerce Design Concept supports a mix of uses and the uses proposed are supported within the design concept.

With that said, a better mixture of uses, as allowed within the existing RC6 zoning district, could help facilitate an improvement in projected traffic flow by dispersing traffic onto Cool Springs Boulevard at different peak times of day. While the proportion of multi-family to commercial space is consistent with approved projects adjacent to this property, the transportation infrastructure does not support the proposed mixture of uses, which is predominantly multifamily residential with peak traffic volumes projected at similar times of day. Envision Franklin directs growth in areas where existing or planned infrastructure can support the proposed uses, and the uses proposed with this development plan place so much strain on the existing transportation infrastructure that minimum traffic requirements cannot be met. (See below for more detailed information.)

The 101 Cool Springs Development has submitted their final version of the Traffic Impact Analysis (TIA), in accordance with City of Franklin TIA guidelines. There were study intersections that did not meet our overall Level of Service D and individual movements that had delay worse than Level of Service E, thus, there are intersections and movements that did not meet City standards. Mitigation was not recommended for the Cool Springs at McEwen intersection, which is showing the greatest amount of excessive delay in this study. This intersection fails to an overall Level of Service F with this development. The added vehicular trips of this and adjacent developments in this area further increase traffic along Cool Springs Boulevard, and this area in general.

The intersection of Cool Springs Boulevard @ Mallory Lane and Mallory Lane @ McEwen were outside the study area. Any development in this area increases traffic at these intersections, as discussed during the Optima development, adding to existing excessive vehicle delays. It should be noted that the current TIA guidelines are being discussed with the Board, and the TIA requirements are anticipated to be adjusted as a result of these discussions. It is unknown at this time if those adjustments would bring the affected intersections of this development into meeting the future TIA standards.

PROCEDURAL REQUIREMENTS:

1. The applicant shall upload the corrected plan to the online plan review website (https://franklin.contractorsplanroom.com/secure/). All revisions to the approved plans shall be “clouded.” With the resubmittal, each condition of approval/open issue in the online plan review system shall contain a full response from the applicant as to the satisfaction or completion of that condition.
2. The City’s project identification number shall be included in all correspondence with any City department relative to this project.

FINANCIAL IMPACT:

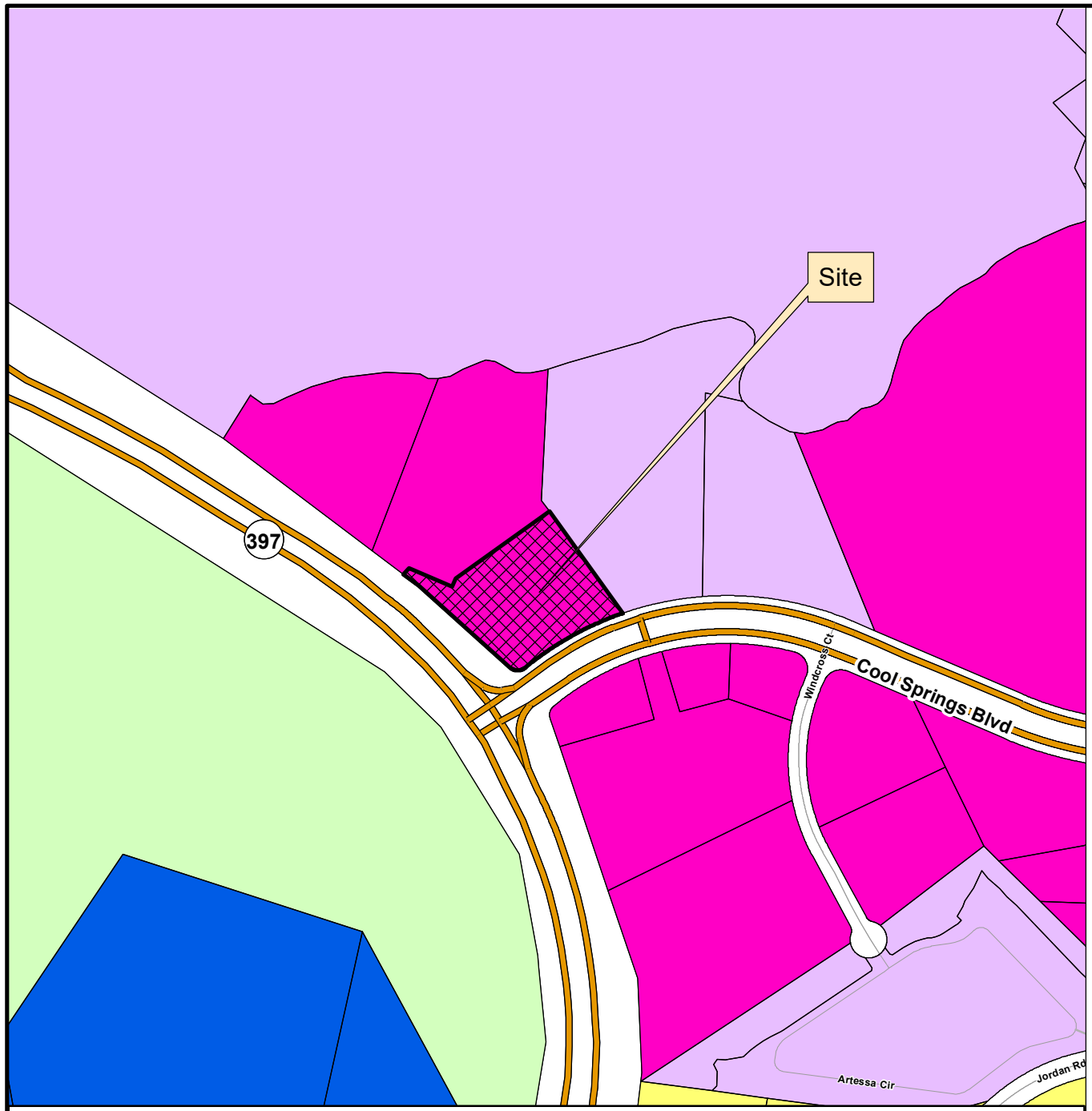
Unknown.

RECOMMENDATION:

Staff recommends that the Planning Commission recommend to the Board of Mayor and Aldermen to disapprove Resolution 2023-42.

101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
ORDINANCE 2023-22
RESOLUTION 2023-42

Project Information
Existing Zoning: R-6 Residential 6 District
Proposed Zoning: PD Planned District
Overlay Districts: 500 ft Buffer of Hillside Overlay
Site Acreage: 2.906 acres
Proposed Number of Dwelling Units: 178
Proposed Nonresidential Square Footage: 3,400 SF



Legend

- 101 Cool Springs Boulevard
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
- RC12 Regional Commerce 12 District
- GO General Office District
- LI Light Industrial District
- HI Heavy Industrial District

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HISTORIC FRANKLIN TENNESSEE

RESOLUTION 2023-42

A RESOLUTION APPROVING A DEVELOPMENT PLAN FOR 101 COOL SPRINGS BOULEVARD PUD SUBDIVISION FOR THE PROPERTY LOCATED FOR THE PROPERTY LOCATED EAST OF MACK HATCHER MEMORIAL PARKWAY AND NORTH OF COOL SPRINGS BOULEVARD , LOCATED AT 101 COOL SPRINGS BOULEVARD.

WHEREAS, the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee, has, or will, approve the zoning for the property as part of Ordinance 2023-22; and

WHEREAS, the Planned Unit Development (PUD) process is a review procedure that is intended to encourage innovative land planning and design and avoid the monotony sometimes associated with large developments by:

a) Reducing or eliminating the inflexibility that sometimes results from strict application of zoning standards that were designed primarily for individual lots;
b) Allowing greater freedom in selecting the means to provide access, light, open space, and design amenities;
c) Encouraging a sensitive design that respects the surrounding established land use character and natural or man-made features of the site including, but not limited to, trees, historic features, streams, hillsides, and floodplains;
d) Promoting quality design and environmentally sensitive development by allowing development to take advantage of special site characteristics, locations, and land uses; and
e) Allowing deviations from certain zoning standards that would otherwise apply if not contrary to the general spirit and intent of this ordinance; and

WHEREAS, the PUD process requires the approval of a Development Plan that is reviewed and approved by BOMA after a public hearing and a recommendation by the Franklin Municipal Planning Commission; and

WHEREAS, in accordance with the provisions of the City of Franklin, Tennessee, Zoning Ordinance, and as required by Tennessee Code Annotated § 13-4-310, as amended, the approval of the Development Plan by the BOMA will initiate a vesting period during which the development standards adopted by the City and in effect on the date of approval shall remain the standards applicable to the approved Development Plan.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:

SECTION I. That the legal description of the property included in the Development Plan is as follows:

PREMISES CONSIDERED

Map-Parcel	Acres
062--04510	2.906
Total	2.906

SECTION II. That the attached Location Map and Survey shall serve the purpose of further delineating the geographical boundaries as described by this Resolution.

SECTION III. That the overall entitlements for the 101 Cool Springs Boulevard PUD Subdivision are as follows:

Entitlements	101 Cool Springs Boulevard PUD
Base Zone District	RC-6
Proposed Zoning District	PD (61.3/3,362)
Other Zoning Overlays	500' buffer of the HHO
Number of Dwelling Units	178
Number of Nonresidential Square Footage	3,362
Number of Hotel Rooms	0
Open Space Requirements	5% (6,330 SF)
Open Space Provided	17,173 SF
Number of Phases in Development	1

SECTION IV. That the Development Plan, the exhibits accompanying the Development Plan, and all conditions and restrictions placed upon the Development Plan by the Franklin Municipal Planning Commission and this Board shall be made a part of this Resolution as though copied verbatim herein, and that a permanent record of the Development Plan, the exhibits accompanying the Development Plan, and all such conditions and restrictions shall be kept in the Franklin Planning and Sustainability Department.

SECTION V. That this Resolution shall take effect from and after the passage of Ordinance 2023-22, on third and final reading, the health, safety, and welfare of the citizens requiring it.

IT IS SO RESOLVED AND DONE on this ____ day of _____, 2023.

ATTEST: **CITY OF FRANKLIN, TENNESSEE:**

_____ _____

Eric S. Stuckey
City Administrator

Dr. Ken Moore
Mayor

Law Dept approved 05.18.23

Approved as to form by:

_____
Shauna R. Billingsley
City Attorney

PREAPPLICATION CONFERENCE: _____

BOMA/FMPC JOINT CONCEPTUAL WORKSHOP: _____

NEIGHBORHOOD MEETING: _____

PLANNING COMMISSION RECOMMENDED APPROVAL: _____

PUBLIC HEARING AND BOMA APPROVAL: _____

101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
ORDINANCE 2023-22
RESOLUTION 2023-42

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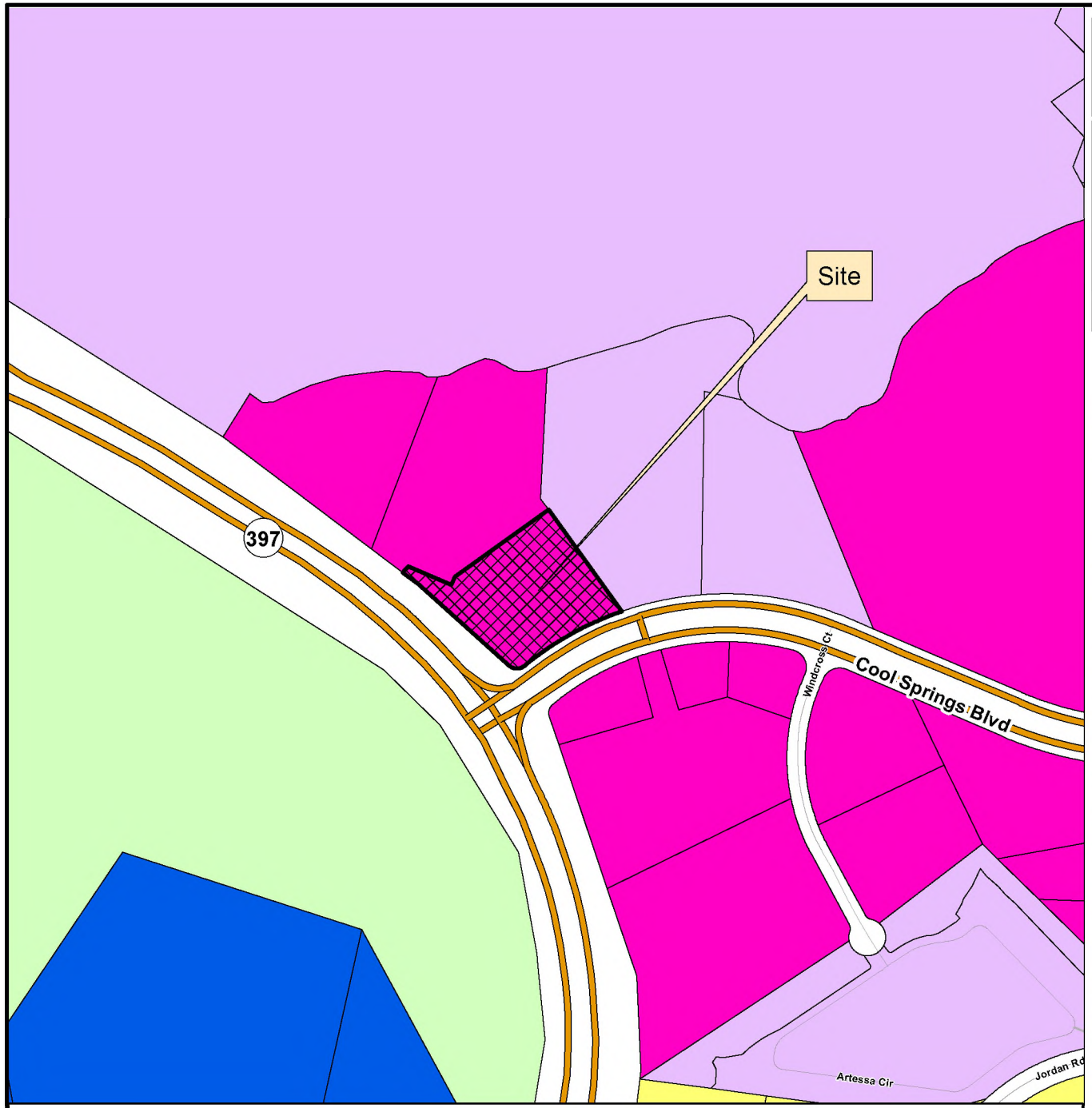

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HISTORIC FRANKLIN TENNESSEE

101 COOL SPRINGS BOULEVARD

DEVELOPMENT PLAN

PLANNED DISTRICT
FRANKLIN, WILLIAMSON, TENNESSEE

VICINITY MAP
NTS

OWNER:
CSLP GP
85 SOUTH SERVICE RD
PLAINVIEW, NY 10803
MITCHELL RECHLER
631-414-8484
mr@mrechler.com

APPLICANT:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

ENGINEER:
KIMLEY-HORN
10 LEA AVE, SUITE 400
NASHVILLE, TN 37204
RYAN MCMASTER, PE
615-564-2876
ryan.mcmaster@kimley-horn.com

ARCHITECT:
906 STUIDO ARCHITECTS
143 FIFTH AVE SOUTH
FRANKLIN, TN 37064
MEREDITH BUCHER, AIA
615-721-6024
meredith.bucher@906studio.com

VESTING DEVELOPMENT STANDARDS:

DEVELOPMENT STANDARD	VERSION/DATE
ZONING ORDINANCE	1.1.2023
SUBDIVISION REGULATIONS	1.1.2022
HISTORIC DISTRICT DESIGN GUIDELINES	5.30.2022
TRANSPORTATION & STREET TECH. STANDARDS	7.1.2022
STORMWATER BMP MANUAL	2021
TECHNICAL SPECIFICATIONS FOR UTILITY	10.12.2020
MUNICIPAL CODE	9-27-2022

SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
COF PROJECT #:	8157
MAP:	MAP #94062G
PARCEL #:	062---04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN CONCEPT:	REGIONAL COMMERCE
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS: 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE VA OVER PODIUM TYPE 1A
MAXIMUM BUILDING HEIGHT:	70' - 0" PER 2018 IBC
PROPOSED MAX. BUILDING HEIGHT:	68' - 6" (SEE ARCH PLANS)
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
APARTMENT PARKING REQUIRED:	311 SPACES 1.5 SPACES PER 1 BEDROOM (134 UNITS) 2.5 SPACES PER 2 BEDROOM (44 UNITS)
COMMERCIAL PARKING REQUIRED	11 SPACES 3.33 SPACES PER 1000 SF (3,362 SF)
TOTAL PARKING REQUIRED:	322 SPACES
TOTAL SHARED PARKING REQUIRED:	297 SPACES (25 SPACE REDUCTION) (SEE SHARED PARKING STUDY)
EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:
1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
2. THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE CITY OF FRANKLIN STANDARDS AND THE APPROVAL OF PLANNING COMMISSION. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY EITHER RELEVANT DEPARTMENT SUPERINTENDENT OR THE PLANNING COMMISSION.
3. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FLIPZONE 4100 AND NAD 83 DATUM.
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5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

SHEET INDEX

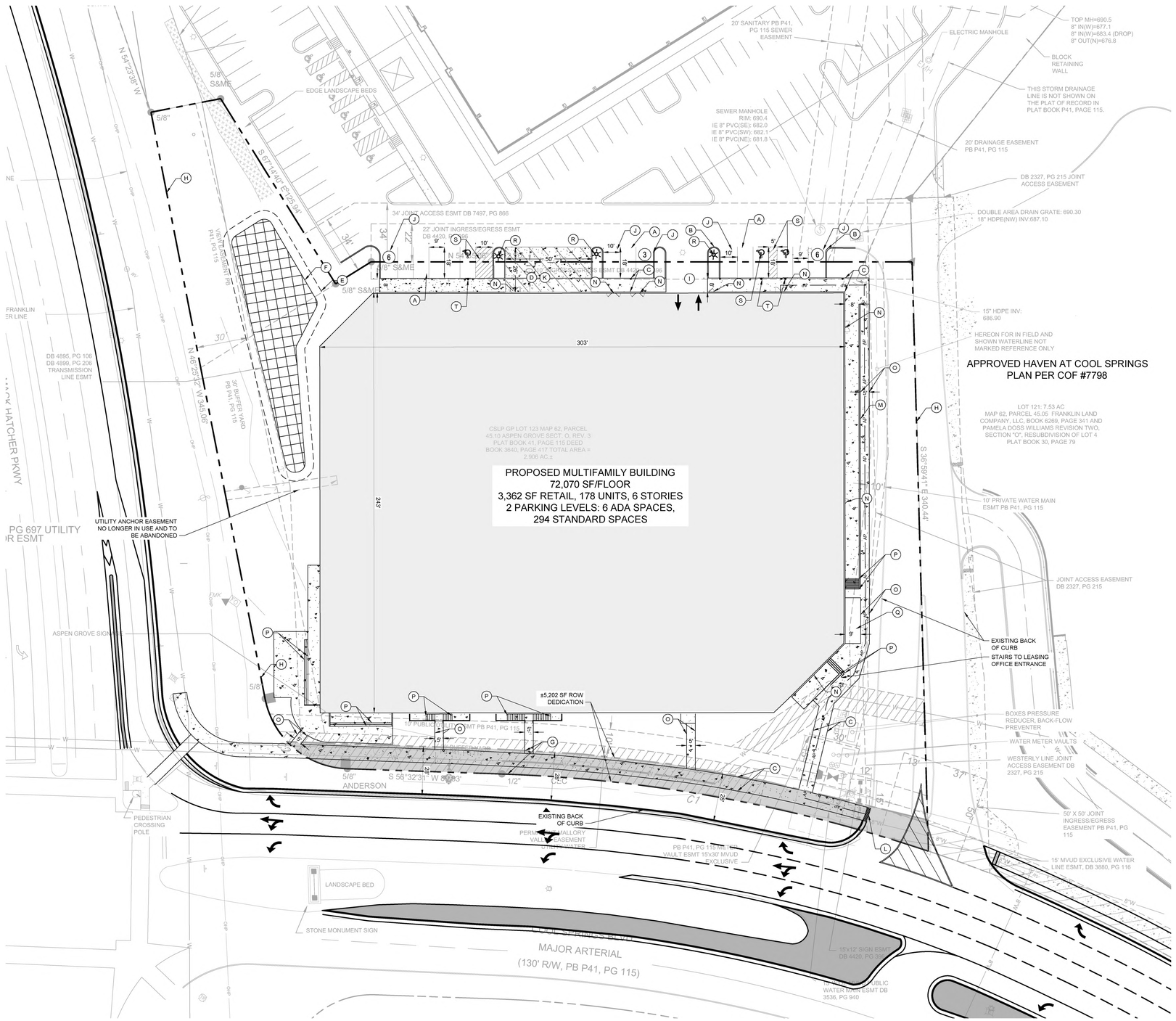
C0.0	COVER SHEET
C1.0	OVERALL EXISTING CONDITIONS
C2.0	OVERALL DEVELOPMENT PLAN
C2.1	DEVELOPMENT PLAN - OPEN SPACE
C3.0	OVERALL GRADING AND DRAINAGE PLAN
C4.1	ROW AND ACCESS - FIRE
C4.2	ROW AND ACCESS - SOLID WASTE
C5.0	OVERALL UTILITY PLAN
L1.0	TREE PRESERVATION PLAN
A1.0	ARCHITECTURE
A1.1	ARCHITECTURE
A1.2	ARCHITECTURE
A1.3	ARCHITECTURE
A1.4	ARCHITECTURE
A1.5	FLOOR PLANS

GREGORY C. GAMBLE
REGISTERED
ARCHITECT
5423
LANDSCAPE ARCHITECT

PRE-APP: November 28, 2022
INITIAL SUBMITTAL: APRIL 10, 2023
RESUBMITTAL: MAY 4, 2023

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE



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SITE PLAN KEYNOTE LEGEND

- (A) 9' X 18' PROPOSED PARKING SPACE (TYP.)
- (B) 6" PROPOSED POST CURB (TYP.)
- (C) 8' SIDEWALK (TYP.)
- (D) REFUSE COLLECTION AREA
- (E) GREEN INFRASTRUCTURE EASEMENT (GIE)
- (F) BIORETENTION POND
- (G) DEDICATED ROW PER CONNECT FRANKLIN PLANS
- (H) EXISTING PROPERTY LINE
- (I) PARKING GARAGE ENTRANCE
- (J) 10'X18' PROPOSED END PARKING SPACE (TYP.)
- (K) DESIGNATED LOADING AREA
- (L) ADA CURB RAMP
- (M) MAX 8' RETAINING WALL
- (N) ENTRANCE/EXIT
- (O) 5' SIDEWALK (TYP.)
- (P) EXTERIOR STAIRS
- (Q) LANDSCAPE BED
- (R) RELOCATED LIGHT POLE
- (S) ADA PARKING STRIPING
- (T) ADA PARKING SIGNAGE

COMPREHENSIVE REVIEW AT SITE PLAN

COMPREHENSIVE REVIEW OF ROADWAY, STORMWATER, AND UTILITY ELEMENTS BY CITY OF FRANKLIN STAFF WILL OCCUR AT SITE PLAN. PROJECT ENTITLEMENTS APPROVED WITH THIS DEVELOPMENT PLAN DO NOT CONSTITUTE APPROVAL OF THE ROADWAY, STORMWATER, AND UTILITY ELEMENTS SHOWN ON THE DEVELOPMENT PLAN. IF, UPON APPLICATION OF CITY OF FRANKLIN STREET, STORMWATER, AND UTILITY STANDARDS AT SITE PLAN, THE APPLICANT CANNOT ACHIEVE THE MAXIMUM APPROVED ENTITLEMENTS, THE APPLICANT SHALL BE CONFINED TO THE ENTITLEMENTS ACHIEVABLE FROM THE APPLICATION OF SAID STANDARDS.

CROSS ACCESS NOTE

IN THE EVENT THAT 151 OR 201 COOL SPRINGS BOULEVARD DOES NOT MOVE FORWARD WITH CONSTRUCTION, THIS DEVELOPMENT SHALL INSTALL THE ACCESS ROAD AND ASSOCIATED STORMWATER TREATMENT AS PART OF THE SITE PLAN SUBMITTAL, TO PROVIDE A FULL ACCESS AT COOL SPRINGS BOULEVARD AND WINDCROSS COURT.

THE CONNECTION TO WINDCROSS MUST BE UNDER CONSTRUCTION PRIOR TO A BUILDING PERMIT FOR THIS SITE AND MUST BE COMPLETED AND ACCEPTED PRIOR TO THE FIRST CERTIFICATE OF OCCUPANCY.

OFFSITE IMPROVEMENTS NOTE

SEE OFFISTE ROADWAY IMPROVEMENTS EXHIBIT FOR DETAILS AND CALLOUTS PERTAINING TO OFFSITE IMPROVEMENTS.

GRAPHIC SCALE IN FEET
0 15 30 60

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION

FRANKLIN, TENNESSEE

RYAN McMASTER
LICENSED PROFESSIONAL ENGINEER
COMMERCIAL
109082
STATE OF TENNESSEE
2023-05-04

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO.	118479000

OVERALL SITE PLAN

SHEET NUMBER
C2.0

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Drawing name: K:\FRA_LDEV\118479000 - Cool Springs Boulevard\4-CADD\PlanSheets\Development Plan\C2.0 OVERALL SITE PLAN.dwg C2.0 OVERALL SITE PLAN May 04, 2023 2:45pm by: Noah.Seethaler

COF no: 8157

CONDITIONS OF APPROVAL:

Open Issues: 11 These issues are currently being filtered

Engineering - Development Plan Checklist

General Issues

19. Cross Access

jimmy.wiseman@franklintn.gov

151 and 201 Cool Springs Boulevard have approved site plans that show cross access and associated stormwater treatment being constructed. If for any reason, 151 or 201 Cool Springs Boulevard do not move forward with construction, this development shall install the access road and associated stormwater treatment as a part of the site plan submittal.

The applicant shall add a note to the development plan that reflects this condition.

The connection to Windcross must be under construction prior to a building permit for this site and must be completed and accepted prior to the first certificate of occupancy.

Reply

51. Traffic Impacts

jimmy.wiseman@franklintn.gov

The 101 Cool Springs Development has submitted their final version of the Traffic Impact Analysis (TIA), in accordance with City of Franklin TIA guidelines. There were study intersections that did not meet our overall Level of Service D and individual movements that had delay worse than Level of Service E, thus, there are intersections and movements that did not meet City standards. *Mitigation was not recommended for the Cool Springs at McEwen intersection, which is showing the greatest amount of excessive delay in this study. This intersection fails to an overall Level of Service F with this development. The added vehicular trips of this and adjacent developments in this area further increase traffic along Cool Springs Boulevard, and this area in general.*

The intersection of *Cool Springs Boulevard @ Mallory Lane* and *Mallory Lane @ McEwen* were outside the study area. Any development in this area increases traffic at these intersections, as discussed during the Optima development, adding to existing excessive vehicle delays. It should be noted that the current TIA guidelines are being discussed with the Board, and the TIA requirements are anticipated to be adjusted as a result of these discussions. It is unknown at this time if those adjustments would bring the affected intersections of this development into meeting the future TIA standards.

Engineering - OLD

General Issues

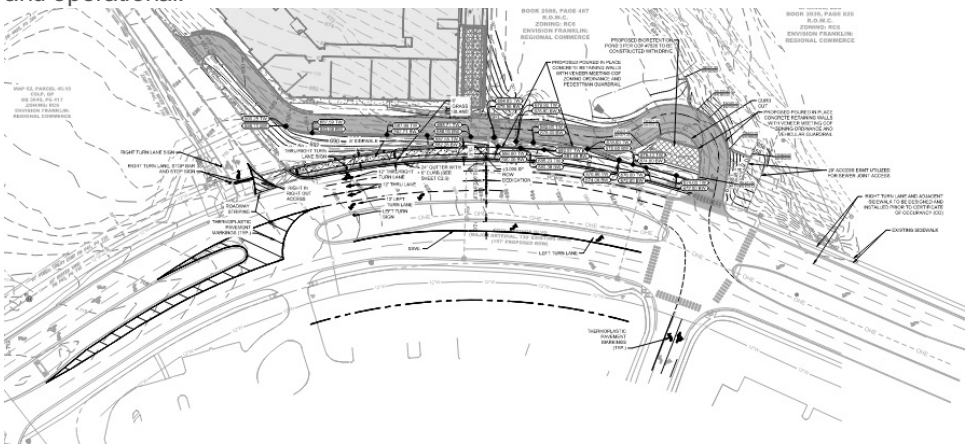
18. (OLD DEVEOPMENT PLAN CHECKLIST) H. Stormwater Management Plan

lance.fittro@franklintn.gov This is an advisory comment to be addressed at Site Plan:

At Site Plan, applicant shall submit a Stormwater Management Report which includes Stormwater Management calculations based on the portion of the property which is to be developed and accounts for any applicable offsite drainage areas. The submitted Stormwater Management Plan shall comply with Green Infrastructure - Runoff Reduction requirements as outlined in Municipal Code Title 23.

25. (OLD DEVEOPMENT PLAN CHECKLIST) F. Development Plan

kevin.long@franklintn.gov Prior to any Certificate of Occupancy associated with this development plan, all required traffic improvements required by the TIA and previously designed by the Haven at Cool Springs and the Legend's View developments shall be fully constructed and operational.



47. (OLD DEVEOPMENT PLAN CHECKLIST) F. Development Plan

kevin.long@franklintn.gov ***This is an advisory comment and does not hinder the approval of this development plan.***

At the site plan stage, all roadway improvements shall be designed in accordance with the appropriate common standards as established by (A) the City of Franklin Transportation and Street Technical Standards, (B) the AASHTO Policy on Geometric Design of Highways and Streets, and (C) the Tennessee Department of Transportation Design Guidelines and Standard Details. Features such as taper lengths, horizontal and vertical geometry, clear zones, guardrail requirements, etc., shall be evaluated In greater detail at the site plan stage and will be required to conform to the accepted standard in order to ensure public safety and well-being, as well as the continued functionality of the existing and proposed street networks.

Engineering Review

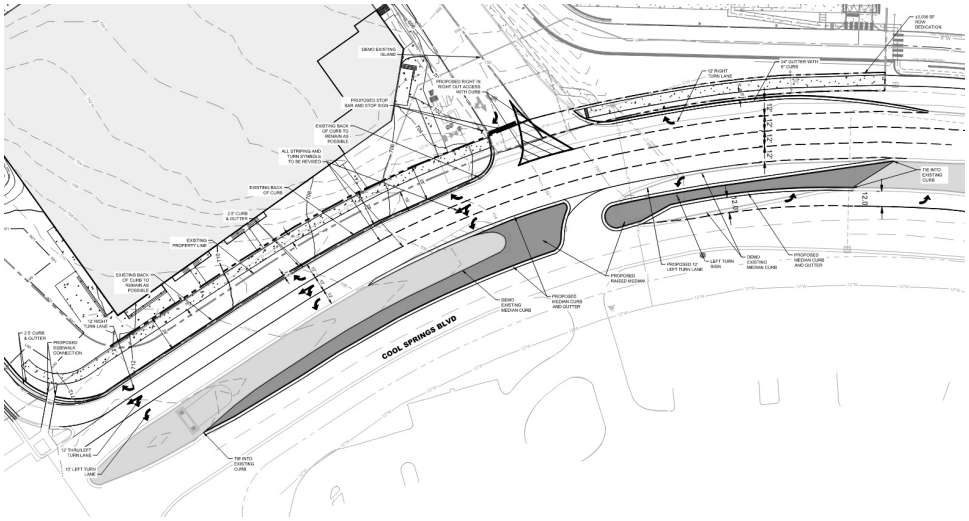
101 Cool Springs Traffic Memo - 11-18-2022.pdf

22. TIA

jimmy.wiseman@franklintn.gov The applicant shall incorporate all of the recommendations of the TIA into this plan. All improvements shall be constructed and accepted prior to the first Certificate of Occupancy for the site.

Per the approved TIA:

- Mack Hatcher Parkway at Cool Springs Boulevard
  - Replace all existing traffic signal backplates with new retroreflective yellow backplates
  - Extend the existing concrete channelized island for the westbound right-turn movement to the north to provide barrier separation for the free-flow slip lane traveling west along Cool Springs Boulevard to north along Mack Hatcher Parkway
  - Extend the westbound left-turn lane to provide 735' of storage
- Cool Springs Boulevard at Site Driveway
  - With the extension of the westbound left-turn lane at the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), provide an additional turn lane pocket to provide 100' of storage for the westbound left-turn movement at Cool Springs Boulevard at Site Driveway (Intersection 2)
- Cool Springs Boulevard at Windcross Court
  - Extend the eastbound left-turn lane to provide 340' of storage.



[Edited By Kevin Long]

FIRE--Planning--DRT

General Issues

2. Fire Protection

curt.edelmann@franklintn.gov The fire department will keep this comment open to remind future reviewers that this comment remains open. Keeping this comment open will not affect the fire department's approval to let his project continue to the site plan stage.

Parks

General Issues

15. Parkland information

kevinl@franklintn.gov The parkland agreement has been approved by Law and sent to applicant for signature 5-5-23. Fees only agreement.
[Edited By Kevin Lindsey]

Planning

General Issues

43. Building Type

chelsea.randolph@franklintn.gov	Applicant shall add the building type information to the site data chart according to Chapter 6-Building Types within the Zoning Ordinance. The building type of the proposed building is Commercial/Mixed-Use Building.

101 COOL SPRINGS BOULEVARD

DEVELOPMENT PLAN

PLANNED DISTRICT
FRANKLIN, WILLIAMSON, TENNESSEE

VICINITY MAP
NTS

OWNER:
CSLP GP
85 SOUTH SERVICE RD
PLAINVIEW, NY 10803
MITCHELL RECHLER
631-414-8484
mr@mrechler.com

APPLICANT:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

ENGINEER:
KIMLEY-HORN
10 LEA AVE, SUITE 400
NASHVILLE, TN 37204
RYAN MCMASTER, PE
615-564-2876
ryan.mcmaster@kimley-horn.com

ARCHITECT:
906 STUIDO ARCHITECTS
143 FIFTH AVE SOUTH
FRANKLIN, TN 37064
MEREDITH BUCHER, AIA
615-721-6024
meredith.bucher@906studio.com

VESTING DEVELOPMENT STANDARDS:

DEVELOPMENT STANDARD	VERSION/DATE
ZONING ORDINANCE	1.1.2023
SUBDIVISION REGULATIONS	1.1.2022
HISTORIC DISTRICT DESIGN GUIDELINES	5.30.2022
TRANSPORTATION & STREET TECH. STANDARDS	7.1.2022
STORMWATER BMP MANUAL	2021
TECHNICAL SPECIFICATIONS FOR UTILITY	10.12.2020
MUNICIPAL CODE	9-27-2022

SITE DATA TABLE

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COF PROJECT #:	8157
MAP:	MAP #94062G
PARCEL #:	062—04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN CONCEPT:	REGIONAL COMMERCE
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS: 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE VA OVER PODIUM TYPE 1A
MAXIMUM BUILDING HEIGHT:	70' - 0" PER 2018 IBC
PROPOSED MAX. BUILDING HEIGHT:	68' - 6" (SEE ARCH PLANS)
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
APARTMENT PARKING REQUIRED:	311 SPACES 1.5 SPACES PER 1 BEDROOM (134 UNITS) 2.5 SPACES PER 2 BEDROOM (44 UNITS)
COMMERCIAL PARKING REQUIRED	11 SPACES 3.33 SPACES PER 1000 SF (3,362 SF)
TOTAL PARKING REQUIRED:	322 SPACES
TOTAL SHARED PARKING REQUIRED:	297 SPACES (25 SPACE REDUCTION) (SEE SHARED PARKING STUDY)
EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:
1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
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5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

SHEET INDEX

C0.0	COVER SHEET
C1.0	OVERALL EXISTING CONDITIONS
C2.0	OVERALL DEVELOPMENT PLAN
C2.1	DEVELOPMENT PLAN - OPEN SPACE
C3.0	OVERALL GRADING AND DRAINAGE PLAN
C4.1	ROW AND ACCESS - FIRE
C4.2	ROW AND ACCESS - SOLID WASTE
C5.0	OVERALL UTILITY PLAN
L1.0	TREE PRESERVATION PLAN
A1.0	ARCHITECTURE
A1.1	ARCHITECTURE
A1.2	ARCHITECTURE
A1.3	ARCHITECTURE
A1.4	ARCHITECTURE
A1.5	FLOOR PLANS

GREGORY C. GAMBLE
TENNESSEE
REGISTERED
LANDSCAPE ARCHITECT
5423

PRE-APP: November 28, 2022
INITIAL SUBMITTAL: APRIL 10, 2023
RESUBMITTAL: MAY 4, 2023

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

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COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN STANDARD:	REGIONAL COMMERCE
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NOTES:

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6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

SURVEY NOTES

1. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLAN COORDINATE SYSTEM, AND NAD 83 DATUM.
2. BASE INFORMATION WAS TAKEN FROM AN ALTA SURVEY PREPARED BY CIVIL A& ENVIRONMENTAL CONSULTANTS, INC., DATED 02-23-2022. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
3. INFORMATION WAS ALSO TAKEN FROM THE CITY OF FRANKLIN GIS AND AERIAL PHOTOGRAPHS.
4. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARRY OTHER THAN THE OWNER.
5. THIS PROJECT IS NOT LOCATED IN A FLOOD HAZARD AREA ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP 47187C0204F, DATED SEPTEMBER 29, 2006, ZONE "X".

SITE SLOPE TABLE

	14% - 19.99%
	20% and above

EXISTING DETENTION POND NOTE

PER ASPEN GROVE MEDICAL OFFICE BUILDING PLANS, THE EXISTING DETENTION POND HAS BEEN DESIGNED AND CONSTRUCTED TO SERVE THE 101 COOL SPRINGS DEVELOPMENT.
DESIGNED STORAGE CAPACITY:=/- 31,000 CF
EXISTING POND PER SURVEY COMPLETED BY CEC DATED 9/14/2022:
AS-BUILT STAGE STORAGE CAPACITY: +/- 31,441 CF

GRAPHIC SCALE IN FEET
0 25 50 100

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
FRANKLIN, TENNESSEE

RYAN McMASTER REGISTERED ENGINEER NO. 108969 STATE OF TENNESSEE 2023-05-04

No.	REVISIONS	DATE	BY
1			
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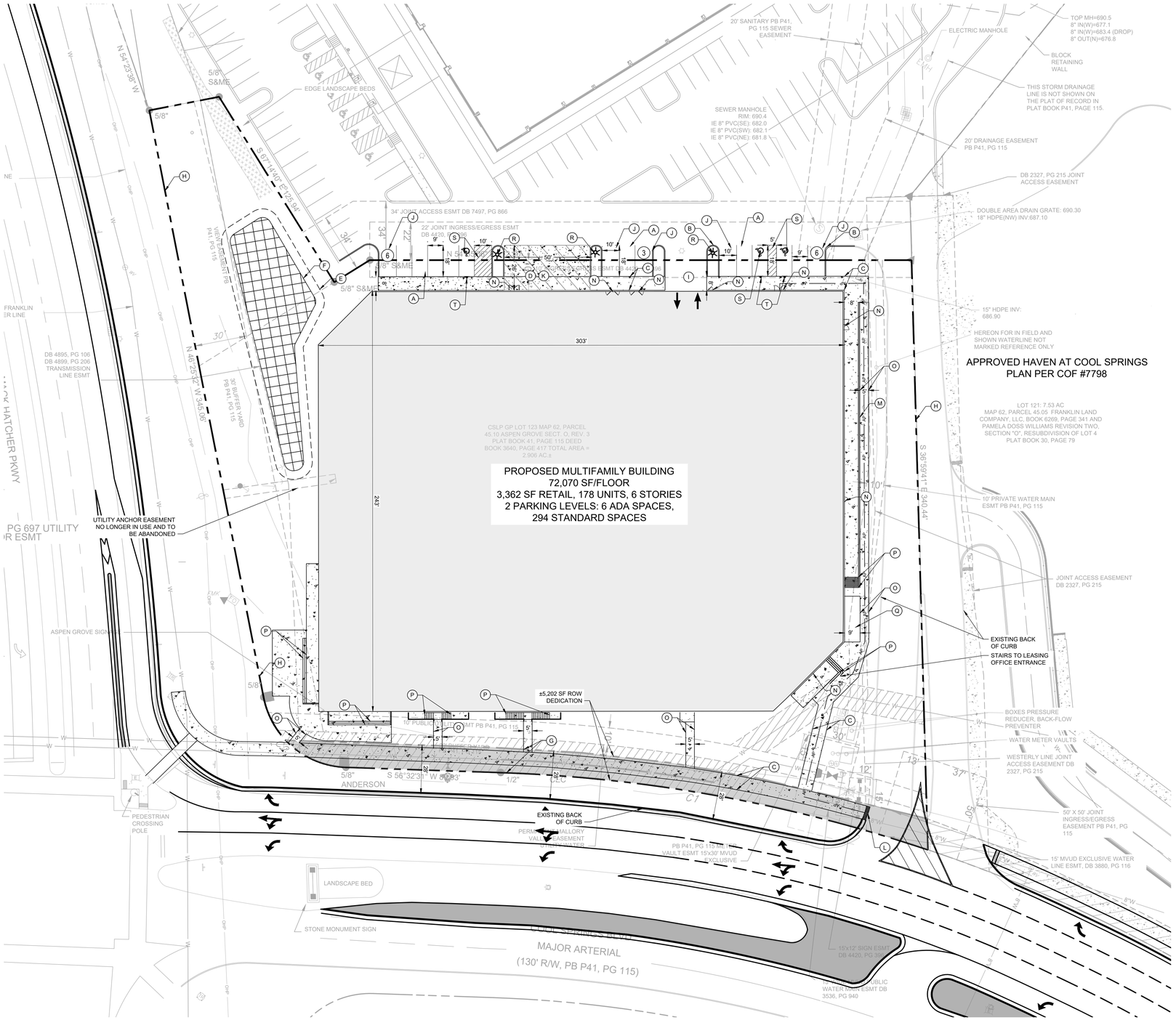
7			
8			
9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO. 118479000	

OVERALL EXISTING CONDITIONS

SHEET NUMBER
C1.0

COF #8157



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SITE PLAN KEYNOTE LEGEND

- (A) 9' X 18' PROPOSED PARKING SPACE (TYP.)
- (B) 6" PROPOSED POST CURB (TYP.)
- (C) 8' SIDEWALK (TYP.)
- (D) REFUSE COLLECTION AREA
- (E) GREEN INFRASTRUCTURE EASEMENT (GIE)
- (F) BIORETENTION POND
- (G) DEDICATED ROW PER CONNECT FRANKLIN PLANS
- (H) EXISTING PROPERTY LINE
- (I) PARKING GARAGE ENTRANCE
- (J) 10'X18' PROPOSED END PARKING SPACE (TYP.)
- (K) DESIGNATED LOADING AREA
- (L) ADA CURB RAMP
- (M) MAX 8' RETAINING WALL
- (N) ENTRANCE/EXIT
- (O) 5' SIDEWALK (TYP.)
- (P) EXTERIOR STAIRS
- (Q) LANDSCAPE BED
- (R) RELOCATED LIGHT POLE
- (S) ADA PARKING STRIPING
- (T) ADA PARKING SIGNAGE

COMPREHENSIVE REVIEW AT SITE PLAN

COMPREHENSIVE REVIEW OF ROADWAY, STORMWATER, AND UTILITY ELEMENTS BY CITY OF FRANKLIN STAFF WILL OCCUR AT SITE PLAN. PROJECT ENTITLEMENTS APPROVED WITH THIS DEVELOPMENT PLAN DO NOT CONSTITUTE APPROVAL OF THE ROADWAY, STORMWATER, AND UTILITY ELEMENTS SHOWN ON THE DEVELOPMENT PLAN. IF, UPON APPLICATION OF CITY OF FRANKLIN STREET, STORMWATER, AND UTILITY STANDARDS AT SITE PLAN, THE APPLICANT CANNOT ACHIEVE THE MAXIMUM APPROVED ENTITLEMENTS, THE APPLICANT SHALL BE CONFINED TO THE ENTITLEMENTS ACHIEVABLE FROM THE APPLICATION OF SAID STANDARDS.

CROSS ACCESS NOTE

IN THE EVENT THAT 151 OR 201 COOL SPRINGS BOULEVARD DOES NOT MOVE FORWARD WITH CONSTRUCTION, THIS DEVELOPMENT SHALL INSTALL THE ACCESS ROAD AND ASSOCIATED STORMWATER TREATMENT AS PART OF THE SITE PLAN SUBMITTAL, TO PROVIDE A FULL ACCESS AT COOL SPRINGS BOULEVARD AND WINDCROSS COURT.

THE CONNECTION TO WINDCROSS MUST BE UNDER CONSTRUCTION PRIOR TO A BUILDING PERMIT FOR THIS SITE AND MUST BE COMPLETED AND ACCEPTED PRIOR TO THE FIRST CERTIFICATE OF OCCUPANCY.

OFFSITE IMPROVEMENTS NOTE

SEE OFFISTE ROADWAY IMPROVEMENTS EXHIBIT FOR DETAILS AND CALLOUTS PERTAINING TO OFFSITE IMPROVEMENTS.

GRAPHIC SCALE IN FEET
0 15 30 60

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION

FRANKLIN, TENNESSEE

RYAN McMASTER
LICENSED PROFESSIONAL ENGINEER
NO. 109092
STATE OF TENNESSEE
2023-05-04

No.	REVISIONS	DATE	BY
1			
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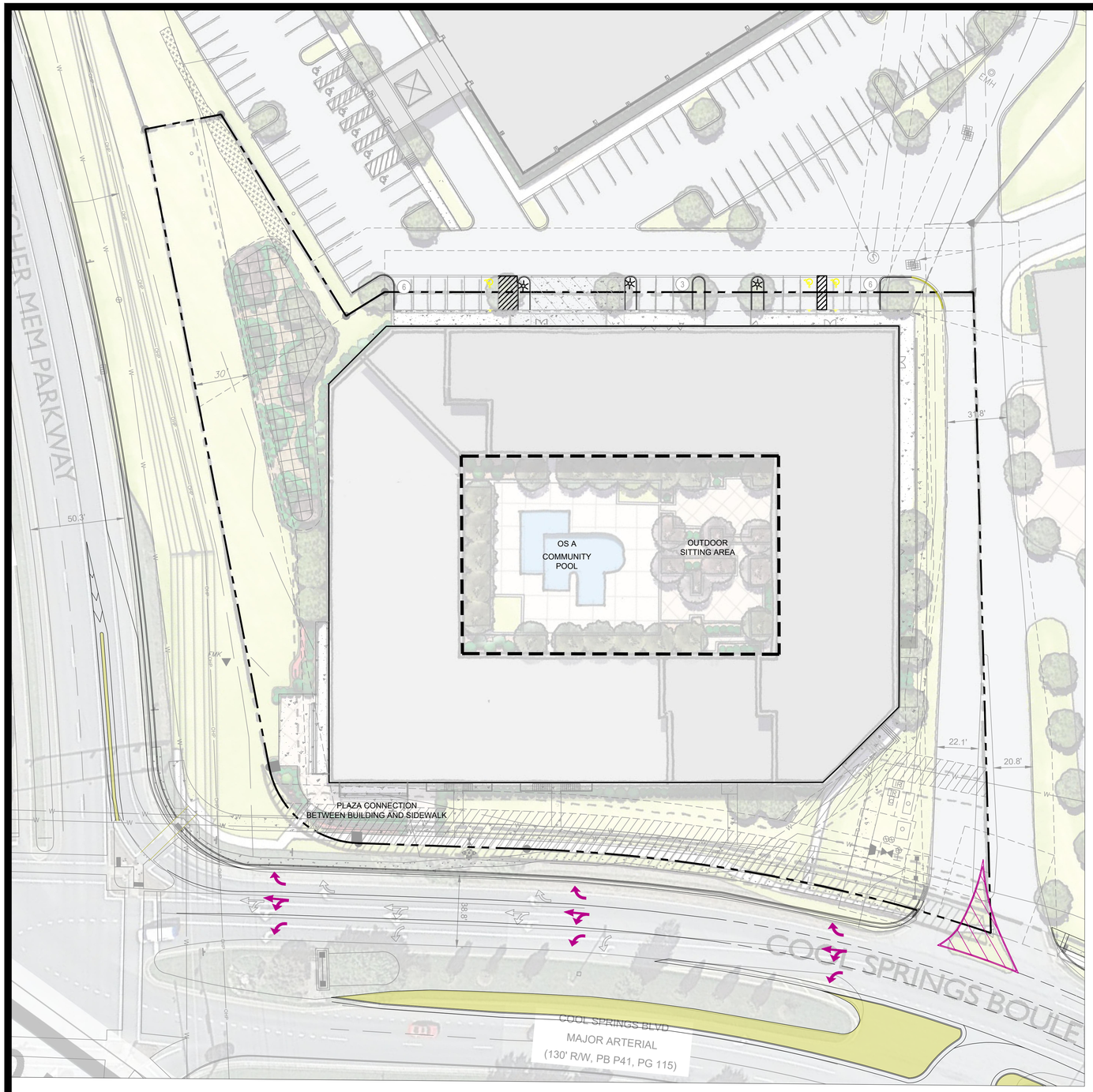
DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO.	118479000

OVERALL SITE PLAN

SHEET NUMBER
C2.0

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Drawing name: K:\FRA_LDEV\118479000 - Cool Springs Boulevard\4-CADD\PlanSheets\Development Plan\C2.0 OVERALL SITE PLAN.dwg C2.0 OVERALL SITE PLAN May 04, 2023 2:45pm by: Noah.Seethaler



OPEN SPACE REQUIREMENT
ZONING ORDINANCE

MINIMUM OPEN SPACE REQUIREMENT
REQUIRED: 5% OPEN SPACE: 6,330 SF
PROVIDED: OPEN SPACE: 17,173 SF

LOT	TYPE	AREA (SF)
OS A	NEIGHBORHOOD AMENITY	17,173 SF

FRONTAGE TYPES:
MACK HATCHER PKWY - LANDSCAPE FRONTAGE
COOL SPRINGS BLVD - LANDSCAPE FRONTAGE

0 30 60 90

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

101 COOL SPRINGS BOULEVARD DEVELOPMENT PLAN

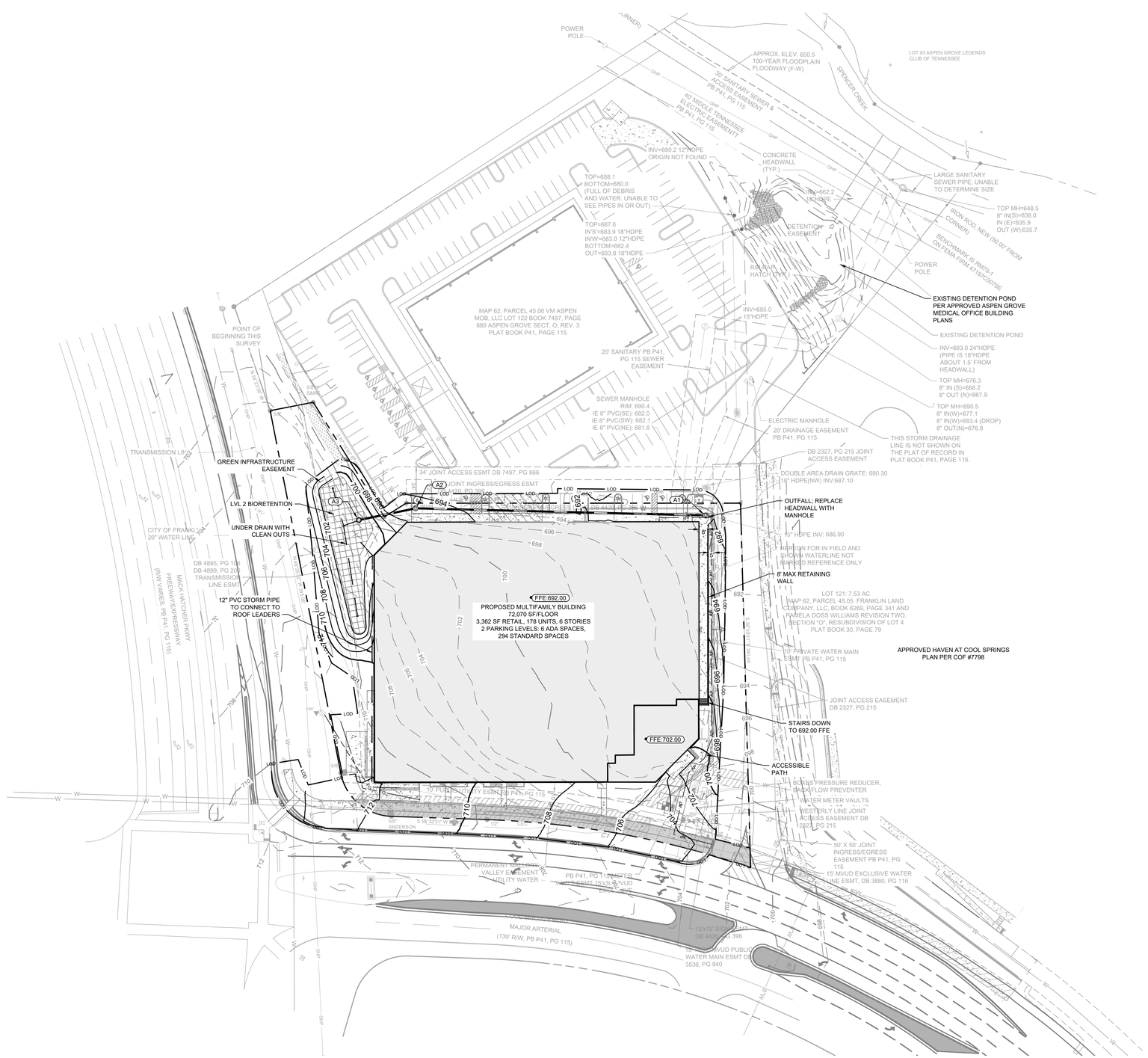
Franklin, Williamson County, Tennessee

GREGORY C. GAMBLE
TENNESSEE
AGRICULTURE
REGISTERED
5423
LANDSCAPE ARCHITECT

DATE: APRIL 10, 2023

Revision Date
1 May 4, 2023

DEVELOPMENT PLAN
SHEET
C2.1
COF # 8157



SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
COF PROJECT #:	8157
MAP:	MAP #94062G
PARCEL #:	062---04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN STANDARD:	REGIONAL COMMERCE
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS; 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE VA OVER PODIUM TYPE 1A
MAXIMUM BUILDING HEIGHT:	70' - 0" PER 2018 IBC
PROPOSED MAX. BUILDING HEIGHT:	68' - 6" (SEE ARCH PLANS)
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
APARTMENT PARKING REQUIRED:	311 SPACES 1.5 SPACES PER 1 BEDROOM (134 UNITS) 2.5 SPACES PER 2 BEDROOM (44 UNITS)
COMMERCIAL PARKING REQUIRED	11 SPACES 3.33 SPACES PER 1000 SF (3,362 SF)
TOTAL PARKING REQUIRED:	322 SPACES
TOTAL SHARED PARKING REQUIRED:	297 SPACES (25 SPACE REDUCTION) (SEE SHARED PARKING STUDY)
EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:

1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
2. THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE CITY OF FRANKLIN STANDARDS AND THE APPROVAL OF PLANNING COMMISSION. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY EITHER RELEVANT DEPARTMENT SUPERINTENDENT OR THE PLANNING COMMISSION.
3. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FLIPZONE 4100 AND NAD 83 DATUM.
4. BASE INFORMATION HAS BEEN TAKEN FROM TWO ALTA SURVEYS PROVIDED BY CEC INC, PERFORMED BY MICHAEL K. STORY DATED 02-23-22 AND 9-14-22. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

COF GRADING & DRAINAGE GENERAL NOTES

1. GRADING PERMIT IS REQUIRED FOR ANY PROJECT DISTURBING MORE THAN 10,000 SF, ADDING MORE THAN 5,000 SF OF IMPERVIOUS SURFACE OR FOR ANY SITE GRADING REQUIRING STOCKPILING OF MATERIAL.
2. THE DEVELOPER SHALL PROVIDE THE NECESSARY LABOR AND SUPERVISION REQUIRED TO SUPPORT FIELD TESTING BY THE INDEPENDENT TESTING FIRM AND INSPECTIONS BY CITY OFFICIALS AT NO COST TO THE CITY. TEST REPORTS OF FIELD TESTING IF APPLICABLE SHALL BE SUBMITTED DIRECTLY TO THE STREET DEPARTMENT. DEFECTS DISCLOSED BY TESTS SHALL BE RECTIFIED.
3. AN AUTHORIZED REPRESENTATIVE OF THE CITY SHALL MAKE A FINAL INSPECTION OF THE PROJECT AFTER COMPLETION TO DETERMINE ACCEPTABILITY OF THE WORK AND FOR RELEASE OF PERFORMANCE BONDS IF REQUIRED. BEFORE THIS FINAL INSPECTION CAN BE MADE, THE ENGINEER RESPONSIBLE FOR THE PROJECT SHALL CERTIFY IN WRITING TO THE CITY ENGINEER THAT THE WORK HAS BEEN COMPLETED IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.
4. DRAINAGE FACILITIES INCLUDING, BUT NOT LIMITED TO, CULVERTS, DETENTION BASINS AND DITCHES, AS WELL AS THE ROADWAY SUB-GRADE, BASE STONE AND BINDER & SURFACE COARSE SHALL BE INSPECTED, TESTED AND GIVEN APPROVAL AT EACH STAGE OF INSTALLATION PRIOR TO PROCEEDING TO THE NEXT STAGE OF CONSTRUCTION. FINAL CONSTRUCTION INSPECTION FOR APPROVAL AND ACCEPTANCE OF STREETS AND DRAINAGE SYSTEMS WILL NOT BE GRANTED UNTIL ALL WORK HAS BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS.
5. LOCATING AND COORDINATION FOR THE RELOCATION OF EXISTING UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. TENNESSEE'S ONE-CALL AND THE CITY OF FRANKLIN UTILITY LOCATION SERVICE SHALL BE UTILIZED IN ADDITION TO COORDINATION WITH LOCAL UTILITY OWNERS. THE CONTRACTOR SHALL AT ALL TIMES PROTECT EXISTING UTILITIES AND WILL BE RESPONSIBLE FOR COSTS DUE TO DAMAGE CAUSED TO ANY UTILITY LINES.

EXISTING STORMWATER NARRATIVE

STORMWATER RUNOFF FOR THIS SITE ENCOUNTERS GENTLY SLOPING GRASSED HILLSIDE THROUGHOUT THE PROPERTY. WATER CURRENTLY FLOWS VIA SHEETFLOW TO THE NORTH CORNER OF THE SITE AND ENTERS AN EXISTING HEADWALL. IT TRAVELS VIA 15" STORM PIPE TO AN EXISTING DETENTION POND BEHIND THE ADJACENT LOT 122 WHERE IT IS STORED AND EVENTUALLY RELEASED INTO SPENCER CREEK.

EXISTING DETENTION POND NOTE

PER ASPEN GROVE MEDICAL OFFICE BUILDING PLANS, THE EXISTING DETENTION POND HAS BEEN DESIGNED AND CONSTRUCTED TO SERVE THE 101 COOL SPRINGS DEVELOPMENT
DESIGNED STORAGE CAPACITY +/- 31,000 CF
EXISTING POND PER SURVEY COMPLETED BY CEC DATED 9/14/2022:
AS-BUILT STAGE STORAGE CAPACITY: +/- 31,441 CF

GRAPHIC SCALE IN FEET
0 25 50 100

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
FRANKLIN, TENNESSEE

RYAN McMASTER REGISTERED ENGINEER COMMERCE NO. 100982 STATE OF TENNESSEE
2023-05-04

No.	REVISIONS	DATE	BY
1			
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9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO. 118479000	

OVERALL GRADING & DRAINAGE PLAN

SHEET NUMBER
C3.0

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Drawing name: K:\FRA_LDEV\118479000 - Cool Springs Boulevard\4-CADD\PlanSheets\Development Plan\C3.0 OVERALL GRADING AND DRAINAGE PLAN.dwg C1.0 OVERALL EXISTING CONDITIONS May 04, 2023 2:45pm by: Noah.Seethaler

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

ROW & ACCESS GENERAL NOTES

1. PRIOR TO BEGINNING ANY CONSTRUCTION, THE DEVELOPER AND/OR CONTRACTOR, SHALL OBTAIN ALL NECESSARY PERMITS AS REQUIRED BY LAW. SUCH PERMITS MAY INCLUDE, BUT ARE NOT LIMITED TO, THOSE REQUIRED BY STATE OF TENNESSEE, WILLIAMSON COUNTY AND OTHER CITY OF FRANKLIN AGENCIES.
2. ALL OFF-SITE WORK WITHIN THE PUBLIC RIGHT-OFWAY SHALL REQUIRE AN APPROVED TRAFFIC CONTROL PLAN WHICH COMPLIES WITH THE MUTCD. NO OFF-SITE EXCAVATION MAY BE UNDERTAKEN IN ANY STREET, ROAD, ALLEY OR RIGHT-OF-WAY OF ANY UTILITY OR TEMPORARY CONSTRUCTION EASEMENT OF THE CITY OF FRANKLIN BY ANY ENTITY UNLESS 72-HOUR NOTICE HAS BEEN GIVEN TO THE CITY OF FRANKLIN TRAFFIC OPERATIONS CENTER. THE CONTRACTOR SHALL HAVE AN APPROVED TRAFFIC CONTROL PLAN ONSITE DURING CONSTRUCTION.
3. CONSTRUCTION MATERIALS SHALL BE FULLY TESTED IN ACCORDANCE WITH THE DESIGNATIONS AND REQUIREMENTS WITHIN THE REFERENCED "TDOT STANDARD SPECIFICATIONS" SECTIONS, UNLESS OTHERWISE NOTED WITHIN THE "STANDARD SPECIFICATIONS" SECTION OF THE CITY OF FRANKLIN TRANSPORTATION & STREET TECHNICAL STANDARDS.
4. AN AUTHORIZED REPRESENTATIVE OF THE CITY SHALL MAKE A FINAL INSPECTION OF THE PROJECT AFTER COMPLETION TO DETERMINE ACCEPTABILITY OF THE WORK AND FOR RELEASE OF PERFORMANCE BONDS IF REQUIRED. BEFORE THIS FINAL INSPECTION CAN BE MADE, THE ENGINEER RESPONSIBLE FOR THE PROJECT SHALL CERTIFY IN WRITING TO THE CITY ENGINEER THAT THE WORK HAS BEEN COMPLETED IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.
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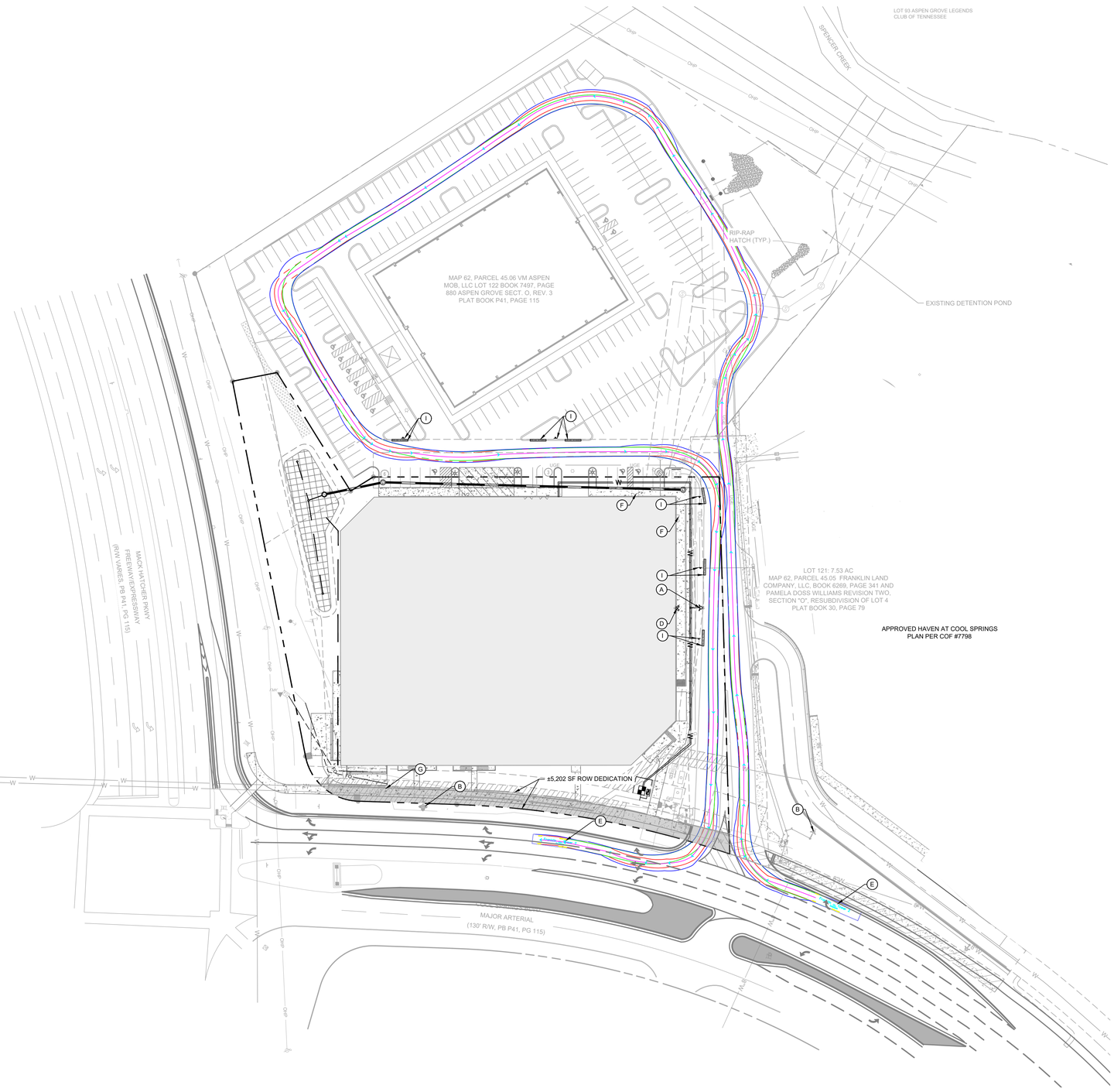
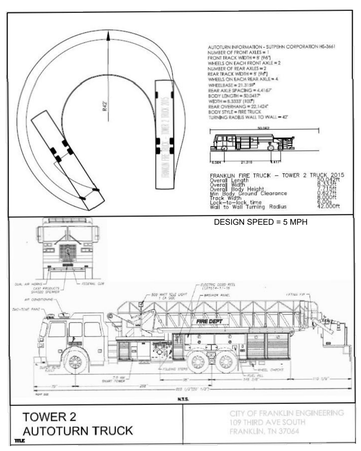
6. ALL TEMPORARY STRIPING SHALL CONFORM TO "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," PUBLISHED BY TDOT, THE LATEST REVISION EXCEPT AS HEREIN AMENDED. WHEN APPROVED, TEMPORARY STRIPING SHALL BE REQUIRED PRIOR TO THE OPENING OF A STREET FOR TRAVEL WHERE PAVEMENT AND/OR PERMANENT STRIPING CANNOT BE COMPLETED DUE TO WEATHER AND/OR TIME CONSTRAINTS.
7. THERMOPLASTIC PAVEMENT MARKINGS SHOULD BE USED ON ALL PUBLIC AND PRIVATE CITY STREET PROJECTS. THERMOPLASTIC TRAFFIC STRIPING AND PAVEMENT MARKINGS SHALL CONFORM TO SECTION 716.03 "THERMOPLASTIC PAVEMENT MARKINGS", OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS (TDOT), AND TO THE CITY OF FRANKLIN TRANSPORTATION & STREET TECHNICAL STANDARDS.





TOWER 2
AUTOTURN TRUCK

CITY OF FRANKLIN ENGINEERING
109 THIRD AVE SOUTH
FRANKLIN, TN 37064

SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
COF PROJECT #:	8157
MAP:	MAP #94062G
PARCEL #:	062---04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN STANDARD:	REGIONAL COMMERCE
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS; 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE VA OVER PODIUM TYPE 1A
MAXIMUM BUILDING HEIGHT:	70' - 0" PER 2018 IBC
PROPOSED MAX. BUILDING HEIGHT:	68' - 6" (SEE ARCH PLANS)
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
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EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:
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5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

VEHICLE LEGEND

- VEHICLE FENDER PATH
- VEHICLE FRONT WHEEL PATH
- VEHICLE REAR WHEEL PATH

STATEMENT OF IMPACTS

ACCESS TO THE DEVELOPMENT WILL BE PROVIDED FROM A PRIVATE DRIVE THAT IS PERPENDICULAR TO COOL SPRINGS BOULEVARD. ACCESS TO THE PARKING GARAGE IS AVAILABLE OFF THE PERPENDICULAR PRIVATE DRIVE TOWARDS THE NORTH CORNER OF THE DEVELOPMENT. THE PROPOSED SITE TO THE EAST WILL HAVE FULL ACCESS FROM THE PRIVATE DRIVE.

KEYNOTE LEGEND

- (A) PROPOSED FIRE HYDRANT ASSEMBLY
- (B) EXISTING FIRE HYDRANT ASSEMBLY
- (C) FIRE LANE STRIPING, SEE ARCH. SHEETS FOR DETAILS
- (D) STANDPIPE (TYP.) / WALL FIRE HYDRANT
- (E) FRANKLIN T-2 SUTPHEN FIRE TRUCK
- (F) BUILDING MAIN ENTRY
- (G) DEDICATED ROW
- (H) APPROVED PROPOSED FIRE HYDRANT ASSEMBLY COF #7798
- (I) NO PARKING SIGN (TYP.) AND FIRE LANE MARKINGS PER COF SPECIFICATIONS

SITE LEGEND

- SS — PROPOSED SANITARY SEWER PIPE
- W — PROPOSED WATER MAIN
- PROPOSED STORM PIPE
- SS — EXISTING SANITARY SEWER PIPE
- W — EXISTING WATER MAIN
- G — EXISTING GAS MAIN
- ST — EXISTING STORM PIPE
- LOD — LIMITS OF DISTURBANCE
- FH — FIRE HYDRANT
- HC — STANDPIPE/WALL HYDRANT

FIRE LANE STRIPPING

FIRE LANES SHALL BE MARKED WITH SIGNS ADJACENT TO THE CURB AND PAVEMENT MARKINGS READING "FIRE LANE - NO PARKING" VISIBLE FROM THE NORMAL LANE OF TRAFFIC AND PAINTED YELLOW OR WHITE AS APPROVED BY THE FIRE MARSHAL. A MAXIMUM OF 50-FEET ALTERNATING BETWEEN SIGNS AND PAVEMENT MARKINGS SHALL BE REQUIRED ALONG THE ENTIRE LENGTH OF THE FIRE LANE. PLACEMENT SUBJECT TO APPROVAL BY THE FIRE MARSHAL. SIZE OF LETTERING ON PAVEMENT SHALL BE 18-INCHES HIGH WITH A 3-INCH BRUSH STROKE.

FIRE FLOW TEST

FIRE FLOW TEST REQUEST AWAITING THE COMPLETION OF THE NEW 12" AND 24" WATER LINE ALONG COOL SPRINGS BOULEVARD.

GRAPHIC SCALE IN FEET
0 25 50 100

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
FRANKLIN, TENNESSEE

RYAN McMASTER REGISTERED ENGINEER NO. 108969 STATE OF TENNESSEE
2023-05-04

No.	REVISIONS	DATE	BY
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DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023

KIMLEY-HORN PROJECT NO. 118479000

ROW AND ACCESS- FIRE

SHEET NUMBER
C4.1

COF #8157

ROW & ACCESS GENERAL NOTES

1. PRIOR TO BEGINNING ANY CONSTRUCTION, THE DEVELOPER AND/OR CONTRACTOR, SHALL OBTAIN ALL NECESSARY PERMITS AS REQUIRED BY LAW. SUCH PERMITS MAY INCLUDE, BUT ARE NOT LIMITED TO, THOSE REQUIRED BY STATE OF TENNESSEE, WILLIAMSON COUNTY AND OTHER CITY OF FRANKLIN AGENCIES.
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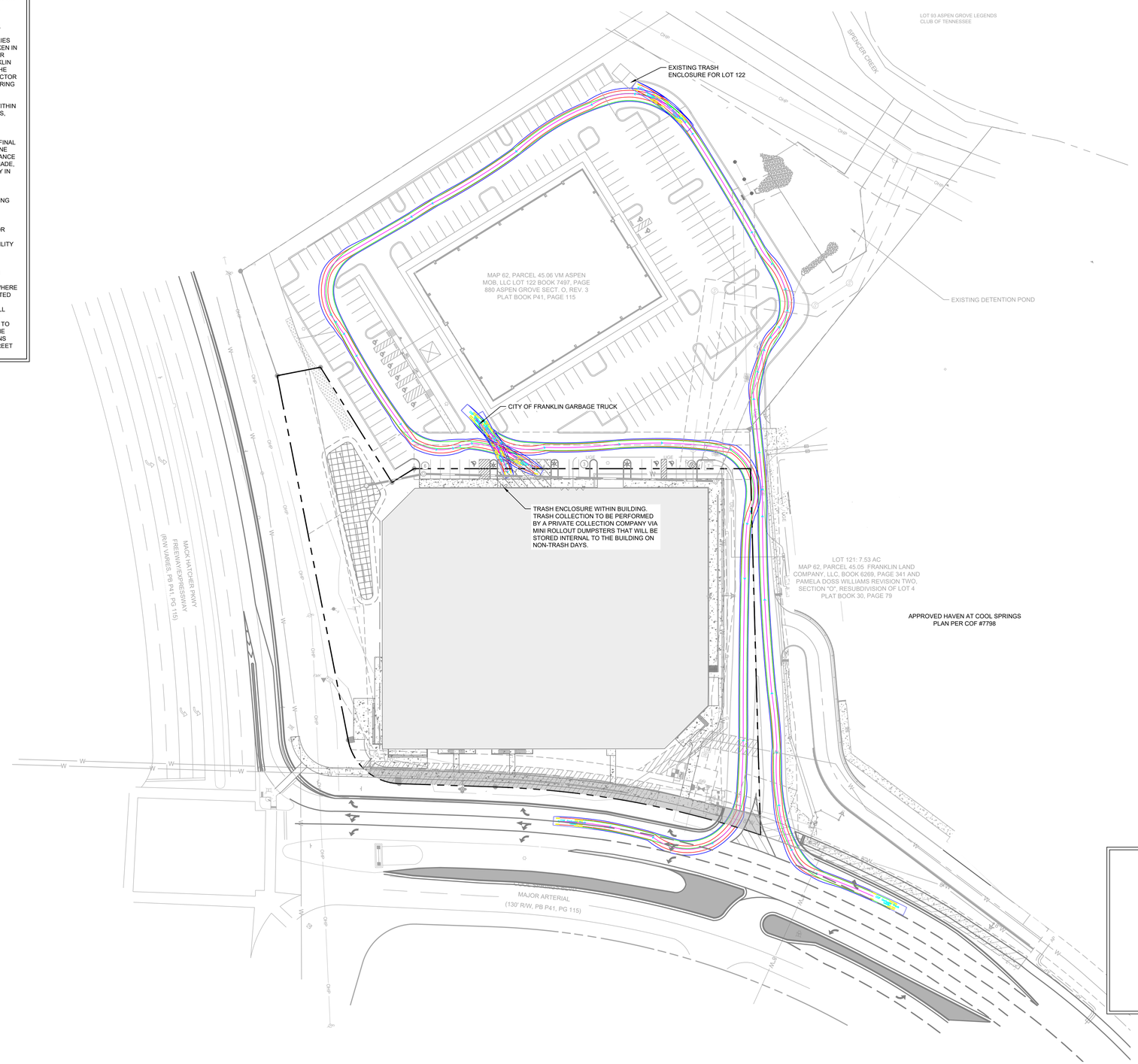
3. CONSTRUCTION MATERIALS SHALL BE FULLY TESTED IN ACCORDANCE WITH THE DESIGNATIONS AND REQUIREMENTS WITHIN THE REFERENCED "TDOT STANDARD SPECIFICATIONS" SECTIONS, UNLESS OTHERWISE NOTED WITHIN THE "STANDARD SPECIFICATIONS" SECTION OF THE CITY OF FRANKLIN TRANSPORTATION & STREET TECHNICAL STANDARDS.
4. AN AUTHORIZED REPRESENTATIVE OF THE CITY SHALL MAKE A FINAL INSPECTION OF THE PROJECT AFTER COMPLETION TO DETERMINE ACCEPTABILITY OF THE WORK AND FOR RELEASE OF PERFORMANCE BONDS IF REQUIRED. BEFORE THIS FINAL INSPECTION CAN BE MADE, THE ENGINEER RESPONSIBLE FOR THE PROJECT SHALL CERTIFY IN WRITING TO THE CITY ENGINEER THAT THE WORK HAS BEEN COMPLETED IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.
5. LOCATING AND COORDINATION FOR THE RELOCATION OF EXISTING UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. TENNESSEE'S ONE-CALL AND THE CITY OF FRANKLIN UTILITY LOCATION SERVICE SHALL BE UTILIZED IN ADDITION TO COORDINATION WITH LOCAL UTILITY OWNERS. THE CONTRACTOR SHALL AT ALL TIMES PROTECT EXISTING UTILITIES AND WILL BE RESPONSIBLE FOR COSTS DUE TO DAMAGE CAUSED TO ANY UTILITY LINES.
6. ALL TEMPORARY STRIPING SHALL CONFORM TO "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," PUBLISHED BY TDOT, THE LATEST REVISION EXCEPT AS HEREIN AMENDED. WHEN APPROVED, TEMPORARY STRIPING SHALL BE REQUIRED PRIOR TO THE OPENING OF A STREET FOR TRAVEL WHERE PAVEMENT AND/OR PERMANENT STRIPING CANNOT BE COMPLETED DUE TO WEATHER AND/OR TIME CONSTRAINTS.
7. THERMOPLASTIC PAVEMENT MARKINGS SHOULD BE USED ON ALL PUBLIC AND PRIVATE CITY STREET PROJECTS. THERMOPLASTIC TRAFFIC STRIPING AND PAVEMENT MARKINGS SHALL CONFORM TO SECTION 716.03 "THERMOPLASTIC PAVEMENT MARKINGS", OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS (TDOT), AND TO THE CITY OF FRANKLIN TRANSPORTATION & STREET TECHNICAL STANDARDS.



SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
COF PROJECT #:	8157
MAP:	MAP #94062G
PARCEL #:	062---04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DESIGN STANDARD:	REGIONAL COMMERCE
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS; 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE VA OVER PODIUM TYPE 1A
MAXIMUM BUILDING HEIGHT:	70' - 0" PER 2018 IBC
PROPOSED MAX. BUILDING HEIGHT:	68' - 6" (SEE ARCH PLANS)
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
APARTMENT PARKING REQUIRED:	311 SPACES 1.5 SPACES PER 1 BEDROOM (134 UNITS) 2.5 SPACES PER 2 BEDROOM (44 UNITS)
COMMERCIAL PARKING REQUIRED	11 SPACES 3.33 SPACES PER 1000 SF (3,362 SF)
TOTAL PARKING REQUIRED:	322 SPACES
TOTAL SHARED PARKING REQUIRED:	297 SPACES (25 SPACE REDUCTION) (SEE SHARED PARKING STUDY)
EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:

1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
2. THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE CITY OF FRANKLIN STANDARDS AND THE APPROVAL OF PLANNING COMMISSION. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY EITHER RELEVANT DEPARTMENT SUPERINTENDENT OR THE PLANNING COMMISSION.
3. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FLIPZONE 4100 AND NAD 83 DATUM.
4. BASE INFORMATION HAS BEEN TAKEN FROM TWO ALTA SURVEYS PROVIDED BY CEC INC, PERFORMED BY MICHAEL K. STORY DATED 02-23-22 AND 9-14-22. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

VEHICLE LEGEND

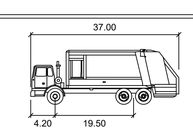
- VEHICLE FENDER PATH
- VEHICLE FRONT WHEEL PATH
- VEHICLE REAR WHEEL PATH

STATEMENT OF IMPACTS

ACCESS TO THE DEVELOPMENT WILL BE PROVIDED FROM A PRIVATE DRIVE THAT IS PERPENDICULAR TO COOL SPRINGS BOULEVARD. ACCESS TO THE PARKING GARAGE IS AVAILABLE OFF THE PERPENDICULAR PRIVATE DRIVE TOWARDS THE NORTH CORNER OF THE DEVELOPMENT. THE PROPOSED SITE TO THE EAST WILL HAVE FULL ACCESS FROM THE PRIVATE DRIVE.

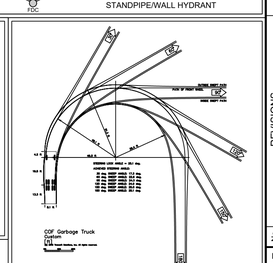
SITE LEGEND

- PROPOSED SANITARY SEWER PIPE
- PROPOSED WATER MAIN
- PROPOSED STORM PIPE
- EXISTING SANITARY SEWER PIPE
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING STORM PIPE
- LIMITS OF DISTURBANCE
- FIRE HYDRANT
- STANDPIPE/WALL HYDRANT



COF Garbage Truck

	feet
Width	: 8.10
Track	: 6.50
Lock to Lock Time	: 6.0
Steering Angle	: 25.1



TRASH COLLECTION NOTE

TRASH COLLECTION TO BE PERFORMED BY A PRIVATE COLLECTION COMPANY VIA MINI ROLLOUT DUMPSTERS THAT WILL BE STORED INTERNAL TO THE BUILDING ON NON-TRASH DAYS.

GRAPHIC SCALE IN FEET 0 25 50 100

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com

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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION

FRANKLIN, TENNESSEE

RYAN McMASTER REGISTERED ENGINEER COMMERCE No. 108982 STATE OF TENNESSEE 2023-05-04

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023

KIMLEY-HORN PROJECT NO. 118479000

ROW AND ACCESS- SOLID WASTE

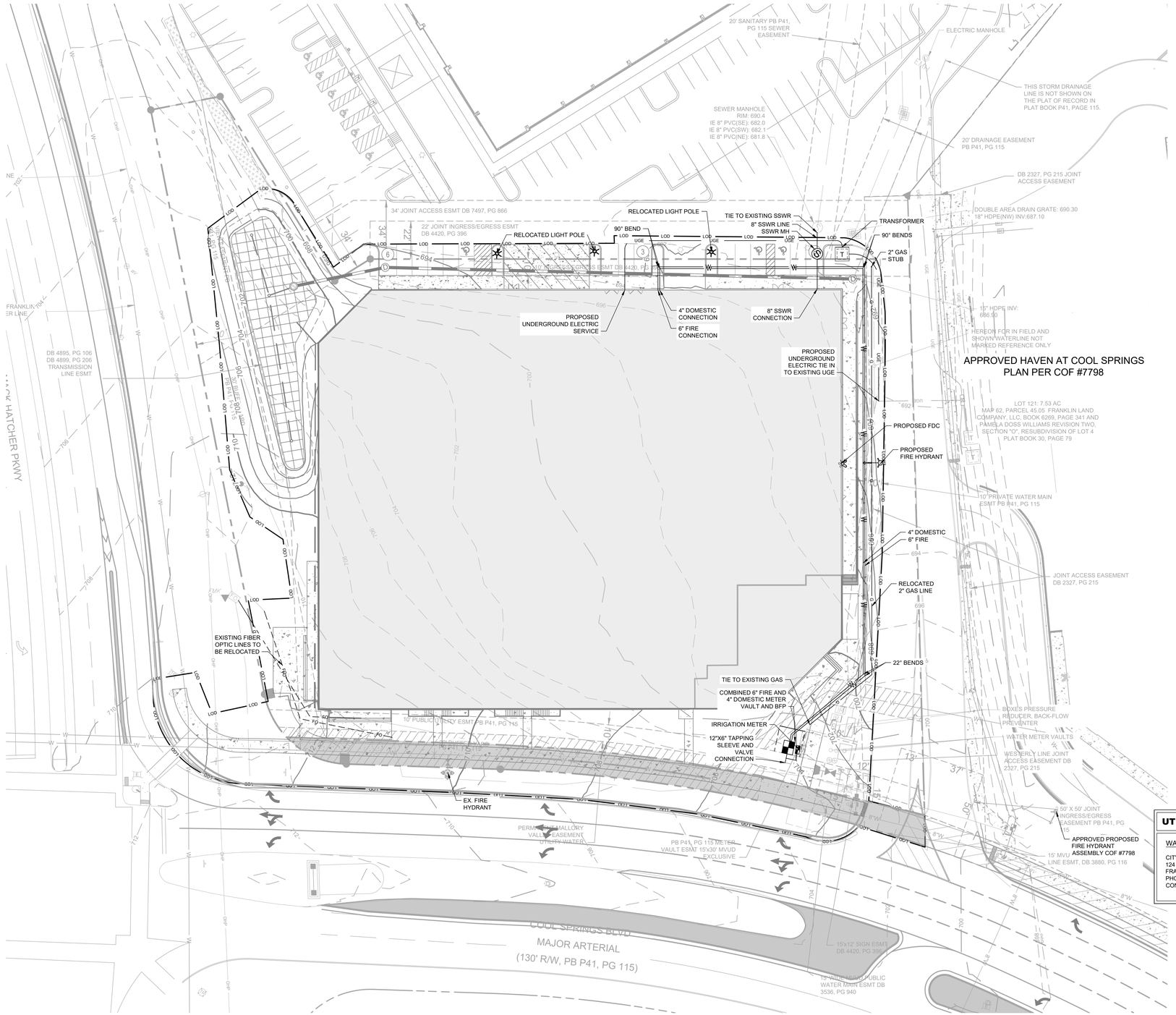
SHEET NUMBER

C4.2

COF #8157

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Drawing name: K:\FRA_LDEV\118479000 - Cool Springs Boulevard\4-CADD\PlanSheets\Development Plan\C4.1 ENLARGED ROW & ACCESS PLAN.dwg C4.2 ROW AND ACCESS- SOLID WASTE May 04, 2023 2:46pm by: Noah.Seethaler



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COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
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DESIGN STANDARD:	REGIONAL COMMERCE
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ACREAGE OF ACCESS ESMT:	0.77 ACRES
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ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
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PROPOSED MAX. BUILDING HEIGHT:	68' - 6" (SEE ARCH PLANS)
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NOTES:

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6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

UTILITY NOTES

1. ALL PERSONS WHO UNDERTAKE THE CONSTRUCTION OF WATER, SEWER AND/OR RECLAIMED WATER LINES LOCATED IN, OR AFFECTING SERVICES PROVIDED BY THE CITY OF FRANKLIN SHALL COMPLY WITH THE REQUIREMENTS AND REGULATIONS SET FORTH IN THE "GENERAL REQUIREMENTS & TECHNICAL SPECIFICATIONS, WATER MANAGEMENT DEPARTMENT, CITY OF FRANKLIN, TENNESSEE" LATEST EDITION, ALONG WITH ANY AMENDMENTS, ADDITIONS, OR ALTERATION THAT MAY THEREAFTER BE ADOPTED BY THE BOARD OF MAYOR AND ALDERMEN BY RESOLUTION.
2. CONTRACTOR SHALL OBTAIN WATER & SEWER INFRASTRUCTURE INSTALLATION PERMIT PRIOR TO SCHEDULING REQUIRED PRE-CONSTRUCTION SITE MEETING. CONTRACTOR SHALL COMPLETE THE PRECONSTRUCTION SITE MEETING PRIOR TO COMMENCING WITH CONSTRUCTION.
3. CONTRACTOR SHALL OBTAIN AND KEEP ALL OF THE FOLLOWING ITEMS ON THE JOBSITE AT ALL TIMES DURING CONSTRUCTION:
   a. APPROVED, STAMPED AND SIGNED WATER AND/OR SEWER PLANS
   b. WATER & SEWER INFRASTRUCTURE INSTALLATION PERMIT, WITH ALL STEPS COMPLETED AND SIGNED BY APPROPRIATE CITY EMPLOYEES.
   c. COPY OF APPROVED AVAILABILITY REQUEST RESPONSE LETTER.
   d. A COPY OF ALL APPROVED CUT SHEETS.
4. ACCEPTANCE OF CITY OF FRANKLIN PUBLIC WATER INFRASTRUCTURE, SANITARY SEWER INFRASTRUCTURE AND/OR RECLAIMED WATER INFRASTRUCTURE SHALL BECOME THE RESPONSIBILITY OF THE CITY OF FRANKLIN, TN FOLLOWING APPROVAL FROM THE CITY OF FRANKLIN INSPECTORS AND ACCEPTANCE BY THE FRANKLIN MUNICIPAL PLANNING COMMISSION. THE ACCEPTANCE DATE SHALL BE BASED ON THE DAY MAINTENANCE SURETIES ARE ESTABLISHED BY THE FRANKLIN MUNICIPAL PLANNING COMMISSION.
5. PRIOR TO THE ACCEPTANCE OF CITY OF FRANKLIN PUBLIC WATER INFRASTRUCTURE, SANITARY SEWER INFRASTRUCTURE AND/OR RECLAIMED WATER INFRASTRUCTURE THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT AS-BUILT DRAWINGS TO THE PLANNING AND SUSTAINABILITY DEPARTMENT.
6. ALL OFF-SITE WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE AN APPROVED TRAFFIC CONTROL PLAN WHICH COMPLIES WITH THE MUTCD. NO OFF-SITE EXCAVATION MAY BE UNDERTAKEN IN ANY STREET, ROAD, ALLEY OR RIGHT-OF-WAY OF ANY UTILITY OR TEMPORARY CONSTRUCTION EASEMENT OF THE CITY OF FRANKLIN BY ANY ENTITY UNLESS 72-HOUR NOTICE HAS BEEN GIVEN TO THE CITY OF FRANKLIN TRAFFIC OPERATIONS CENTER. THE CONTRACTOR SHALL HAVE AN APPROVED TRAFFIC CONTROL PLAN ONSITE DURING CONSTRUCTION.
7. ANY DAMAGES CAUSED TO EXISTING UTILITIES DURING CONSTRUCTION SHALL, AT HIS OWN EXPENSE, BE REPLACED OR REPAIRED TO ORIGINAL CONDITION AND QUALITY, AS APPROVED BY THE OWNER AND REPRESENTATIVE OF THE APPROPRIATE UTILITY COMPANY, BY THE CONTRACTOR.

UTILITY CONTACTS

WATER

CITY OF FRANKLIN
124 LUMBER DR.
FRANKLIN, TN 37064
PHONE: (615) 794-4554
CONTACT: UTILITY INSPECTOR

UTILITY LAYOUT NOTE

DETAILS AND LAYOUT OF UTILITIES SHOWN GRAPHICALLY ON THIS PLAN ARE SUBJECT TO CHANGE BETWEEN DEVELOPMENT PLAN AND SITE PLAN SUBMITTALS.

EXISTING UTILITIES NOTE

CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES AND/OR CONFLICTS WITH EXISTING OR PROPOSED UTILITIES PRIOR TO PROCEEDING. COF PARTICIPATES IN 811/TN ONE CALL. CONTACT COF WATER/SEWER DEPT. FOR LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

WATER INFRASTRUCTURE NOTE

WATER LAYOUT SHOWN ON THIS PLAN IS CONCEPTUAL. REFER TO FINAL DRAWINGS PROVIDED BY MALLORY VALLEY UTILITY DISTRICT FOR CONSTRUCTION.

FIRE FLOW TEST

FIRE FLOW TEST REQUEST AWAITING THE COMPLETION OF THE NEW 12" AND 24" WATER LINE ALONG COOL SPRINGS BOULEVARD.

GRAPHIC SCALE IN FEET
0 15 30 60

NORTH

Kimley»Horn
4031 Aspen Grove Dr Suite 200, TN 37067
Main: 615.564.2701 | www.kimley-horn.com
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION

FRANKLIN, TENNESSEE

RYAN McMASTER REGISTERED ENGINEER AND ARCHITECT COMMERCE TN 108028 STATE OF TENNESSEE
2023-05-04

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO. 118479000	

OVERALL UTILITY PLAN

SHEET NUMBER
C5.0

COF #8157

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Drawing name: K:\FRA_LDEV\118479000 - Cool Springs Boulevard\4-CADD\PlanSheets\Development Plan\C5.0 OVERALL UTILITY PLAN.dwg C1.0 OVERALL EXISTING CONDITIONS May 04, 2023 2:46pm by: Noah.Seethaler

TREE CANOPY RETENTION

OVERALL SITE AREA = 126,583 SF (2.906 AC)

EXISTING TREE CANOPY
0 (AC) 0 SF

NO EXISTING TREE CANOPY ON SITE

FIVE EXISTING CANOPY TREES TO BE REMOVED FROM INGRESS/EGRESS EASEMENT ALONG THE NORTH PROPERTY LINE.

0 30 60 90

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

101 COOL SPRINGS BOULEVARD DEVELOPMENT PLAN

Franklin, Williamson County, Tennessee

GREGORY C. GAMBLE
TENNESSEE REGISTERED
LANDSCAPE ARCHITECT
5423

DATE: APRIL 10, 2023

Revision Date
1. May 4, 2023
2.
3.
4.

TREE PRESERVATION PLAN

SHEET

L1.0

COF # 8157

VIEWS ALONG COOL SPRINGS BLVD.

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

906

101 COOL SPRINGS BLVD
DEVELOPMENT PLAN
Franklin, Williamson County, Tennessee

Revision Date

DEVELOPMENT PLAN

SHEET

A1.0

COF # XXXX

VIEW ALONG COOL SPRINGS BLVD.

VIEW ALONG COOL SPRINGS BLVD.

VIEW ALONG MACK HATCHER MEM. PKWY.

COOL SPRINGS BLVD. AND MACK HATCHER MEM. PKWY.

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

906

101 COOL SPRINGS BLVD
DEVELOPMENT PLAN
Franklin, Williamson County, Tennessee

Revision Date

DEVELOPMENT PLAN

SHEET

A1.2

COF # XXXX

VIEW ALONG MACK HATCHER MEM. PKWY.

COOL SPRINGS BLVD. AND MACK HATCHER MEM. PKWY.

COOL SPRINGS BLVD. AND MACK HATCHER MEM. PKWY.

VIEW ALONG COOL SPRINGS BLVD.

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

906

101 COOL SPRINGS BLVD
DEVELOPMENT PLAN
Franklin, Williamson County, Tennessee

Revision Date

DEVELOPMENT PLAN

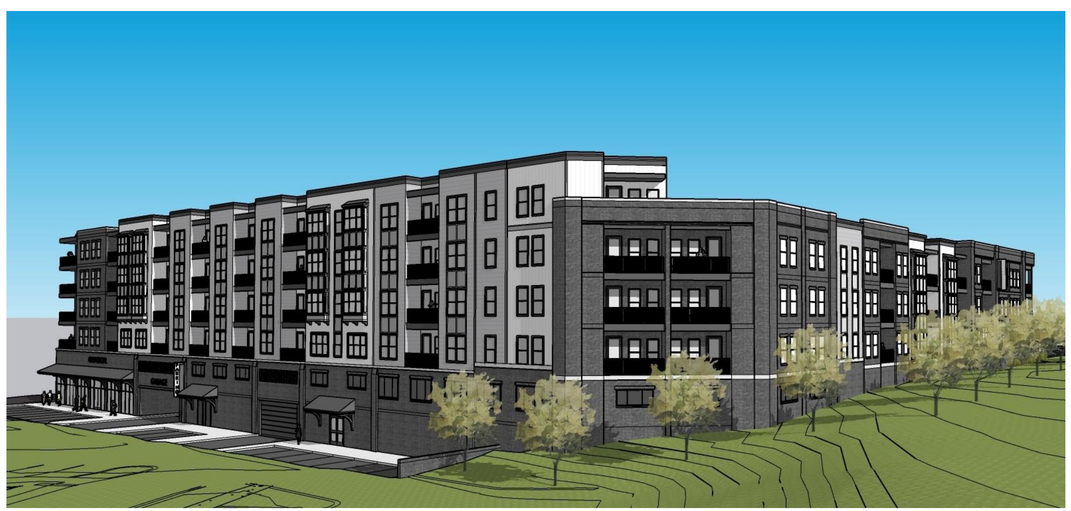
SHEET

A1.3

COF # XXXX

VIEW AT ACCESS ROAD AT BACK OF BUILDING

VIEW AT BACK OF BUILDING



VIEW ALONG MACK HATCHER MEM. PKWY. TOWARDS COOL SPRINGS BLVD.

VIEW ALONG COOL SPRINGS BLVD.

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

906

101 COOL SPRINGS BLVD
DEVELOPMENT PLAN
Franklin, Williamson County, Tennessee

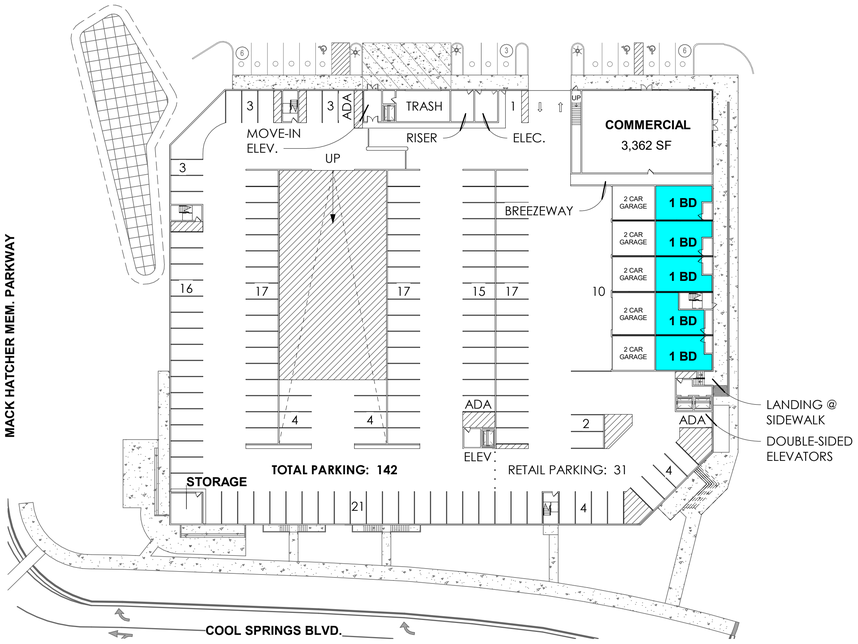
Revision Date

DEVELOPMENT PLAN

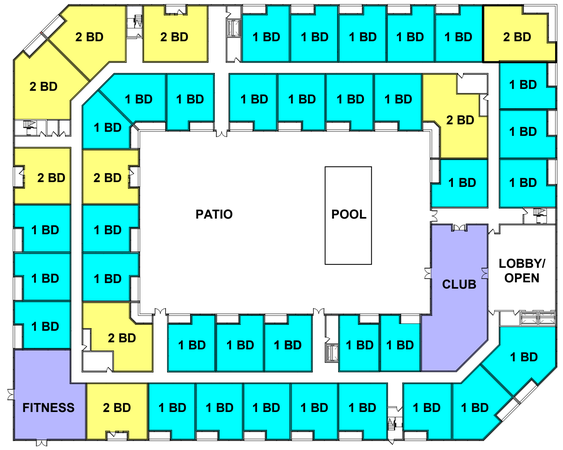
SHEET

A1.4

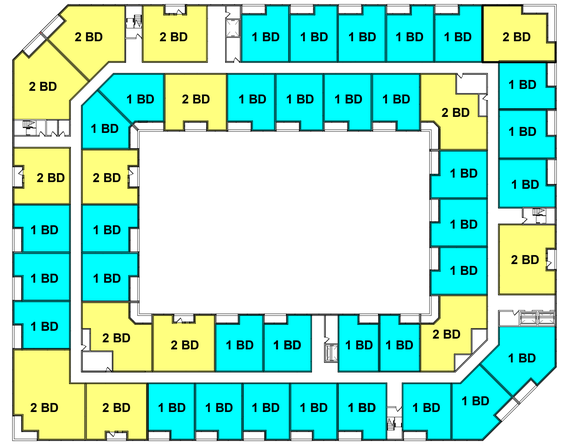
COF # XXXX



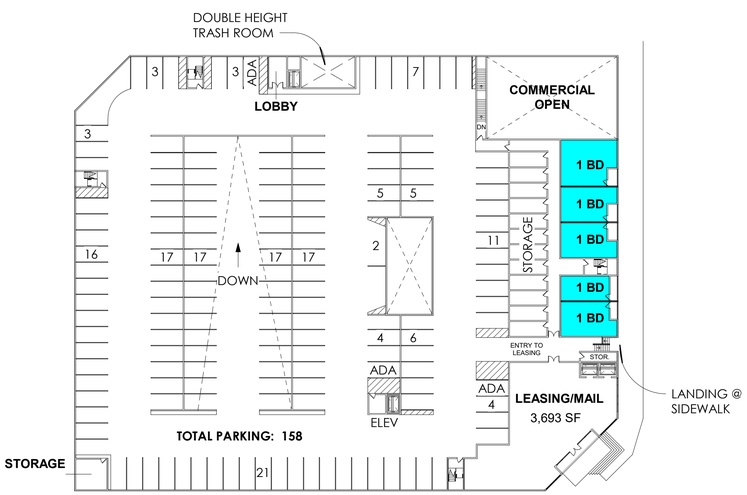
GARAGE LEVEL 1 (692'-0")
1" = 40'-0"



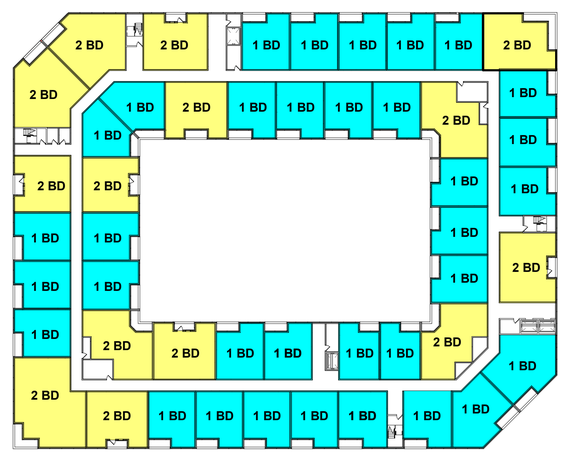
UNIT LEVEL 1 (714'-0")
1" = 40'-0"



UNIT Level 3 (736'-0")
1" = 40'-0"



GARAGE LEVEL 2 (703'-0")
1" = 40'-0"



UNIT Level 2 (725'-0")
1" = 40'-0"

UNIT Level 4 (747'-0")
1" = 40'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

101 COOL SPRINGS BLVD DEVELOPMENT PLAN

Franklin, Williamson County, Tennessee

Revision Date

DEVELOPMENT PLAN

SHEET

A1.5

COF # XXXX

Traffic Impact Study

101 Cool Springs Boulevard

May 2023

FOR SUBMITTAL TO:

City of Franklin, Tennessee

PREPARED FOR:

Rechler Equity Development LLC

Kimley»Horn

Traffic Impact Study

101 Cool Springs Boulevard

FOR SUBMITTAL TO:

City of Franklin, Tennessee

PREPARED FOR:

Rechler Equity Development LLC

PREPARED BY:

Kimley»Horn

4031 Aspen Grove Drive

Franklin, Tennessee 37067

615.564.2701

May 2023

Project Number 118479000

05/04/2023

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1.0 EXECUTIVE SUMMARY

This traffic study re-evaluated the anticipated traffic impacts associated with the *101 Cool Springs Boulevard* development, which is expected to be completed in 2025 (referred to herein as build-out year). As currently envisioned, the development will consist of multifamily housing with approximately 178 dwelling units and 3,500 SF of retail space. The approximate 2.91-acre site is located north of Cool Springs Boulevard and east of Mack Hatcher Parkway within the City of Franklin, Tennessee. The development of the 101 Cool Springs Boulevard site was previously evaluated as a 60,000 sf office complex and included in the Join TIA prepared for the 101, 151 and 201 Cool Springs Boulevard sites. Due to the change in land uses proposed for the 101 Cool Springs Boulevard Site and a slight increase in the expected trip generation, a re-evaluation was requested by the City of Franklin.

The following scenarios were considered in this analysis:

- Existing 2023 Conditions
- Projected 2025 No-Build Conditions
- Projected 2025 Build Conditions
- Projected 2030 No-Build Horizon Conditions
- Projected 2030 Build Horizon Conditions

The study network for this analysis includes the following intersections:

1. Mack Hatcher Parkway and Cool Springs Boulevard
2. Cool Springs Boulevard at Site Driveway/Commercial Driveway
3. Cool Springs Boulevard at Windcross Court
4. Cool Springs Boulevard at McEwen Drive

The proposed development will be served by two driveways:

- Right-in/right-out (RIRO) driveway along Cool Springs Boulevard approximately 475' east of Mack Hatcher Parkway – currently full access driveway which will be converted to RIRO with other developments and is assumed to be in place by the Projected 2025 No-Build conditions.
- Extension of Windcross Court to become the north leg of the existing signalized intersection also to be completed by others and assumed in place by the Projected 2025 No-Build conditions.

1.1 NO-BUILD IMPROVEMENT RECOMMENDATIONS

The following development improvements are recommended to serve the Projected 2025 No-Build traffic conditions (Note: this would be the improvements needed to serve the background traffic and is unrelated to the *101 Cool Springs Boulevard* development).

- All Intersections
    - It is recommended for the City to continue to monitor actual traffic patterns and volumes and develop updated signal timing plans in order to optimize intersection operations and minimize delays and queue as approved developments continue to develop in the area

1.2 DEVELOPMENT IMPROVEMENT RECOMMENDATIONS

The following development improvements are recommended to serve the Projected 2025 Build traffic conditions (Note: this would be the improvements needed to serve the traffic associated with the *101 Cool Springs Boulevard* development).

- Intersection 1 – Mack Hatcher Parkway at Cool Springs Boulevard
    - Replace all existing traffic signal backplates with new retroreflective yellow backplates
    - Extend the existing concrete channelized island for the westbound right-turn movement to the north to provide barrier separation for the free-flow slip lane traveling west along Cool Springs Boulevard to north along Mack Hatcher Parkway
    - Extend the westbound left-turn lane to provide 735’ of storage
- Intersection 2 – Cool Springs Boulevard at Site Driveway
    - With the extension of the westbound left-turn lane at the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), provide an additional turn lane pocket to provide 100’ of storage for the westbound left-turn movement at Cool Springs Boulevard at Site Driveway (Intersection 2).
- Intersection 3 – Cool Springs Boulevard at Windcross Court
    - Extend the eastbound left-turn lane to provide 340’ of storage
- Note: A concept graphic illustrating the recommended improvements is provided in **Appendix A**.

2.0 INTRODUCTION

This report presents the re-evaluation of the anticipated traffic impacts associated with the *101 Cool Springs Boulevard* development, which is expected to be completed in 2025 (referred to herein as build-out year). As currently envisioned, the development will consist of multifamily housing with approximately 178 dwelling units and 3,500 SF of retail space. The approximate 2.91-acre site is located north of Cool Springs Boulevard and east of Mack Hatcher Parkway within the City of Franklin, Tennessee. The development of the 101 Cool Springs Boulevard site was previously evaluated as a 60,000 sf office complex and included in the Join TIA prepared for the 101, 151 and 201 Cool Springs Boulevard sites. Due to the change in land uses proposed for the 101 Cool Springs Boulevard Site and a slight increase in the expected trip generation, a re-evaluation was requested by the City of Franklin.

This report will summarize the analyses of the following scenarios:

- Existing 2023 Conditions
- Projected 2025 No-Build Conditions
- Projected 2025 Build Conditions
- Projected 2030 No-Build Horizon Conditions
- Projected 2030 Build Horizon Conditions

The study network for this analysis includes the following intersections:

1. Mack Hatcher Parkway and Cool Springs Boulevard
2. Cool Springs Boulevard at Site Driveway/Commercial Driveway
3. Cool Springs Boulevard at Windcross Court
4. Cool Springs Boulevard at McEwen Drive

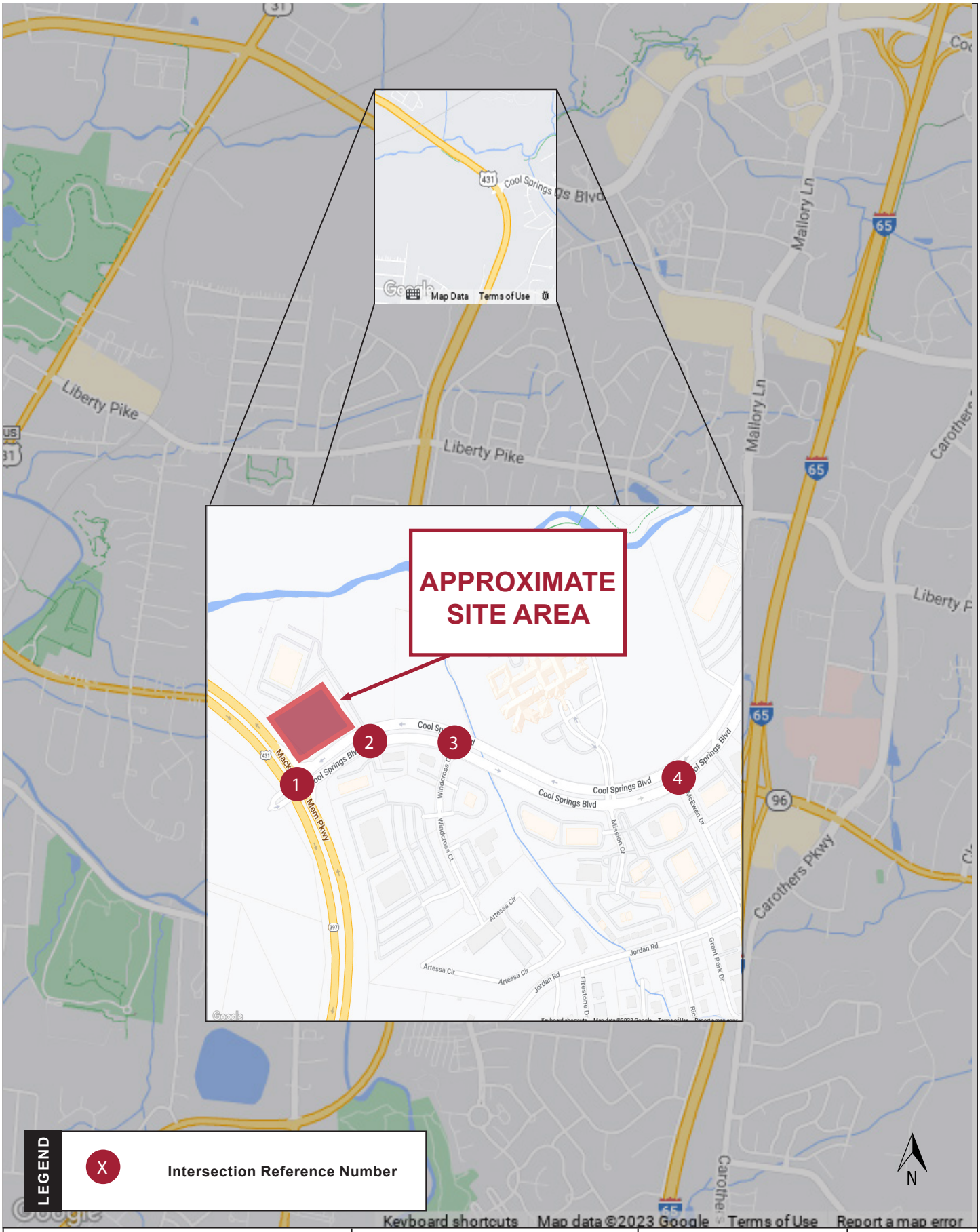
The proposed development will be served by two driveways:

- Right-in/right-out (RIRO) driveway along Cool Springs Boulevard approximately 475' east of Mack Hatcher Parkway – currently full access driveway which will be converted to RIRO with other developments and is assumed to be in place by the Projected 2025 No-Build conditions.
- Extension of Windcross Court to become the north leg of the existing signalized intersection also to be completed by others and assumed in place by the Projected 2025 No-Build conditions.

For the purposes of this traffic impact study, Cool Springs Boulevard is considered to have an east-west orientation. Mack Hatcher Parkway, Windcross Court, McEwen Drive, Commercial Driveway, and the existing site driveway are considered to have a north-south orientation.

Figure 1 provides a location map of the project site. **Figure 2** provides an aerial image of the project site.

A site plan is also included in **Appendix A**.



Kimley»Horn	101 Cool Springs Boulevard TIS	Site Location Map	Figure 1

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Kimley»Horn	101 Cool Springs Boulevard TIS	Site Aerial	Figure 2

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3.0 EXISTING CONDITIONS

3.1 VEHICULAR NETWORK

Characteristics for the roadways within the study are summarized in **Table 1**. The existing road geometry is illustrated in **Figure 3.**

Table 1: Roadway Network

Roadway	Number of Lanes	Posted Speed Limit (MPH)	Functional Classification	2022 TDOT AADT
Cool Springs Boulevard	4	40	Major Arterial	25,793
Mack Hatcher Parkway	4	45	Freeway/Expressway	29,532
Windcross Court	2	N/A	Local	N/A
McEwen Drive	4	30	Major Arterial	12,411

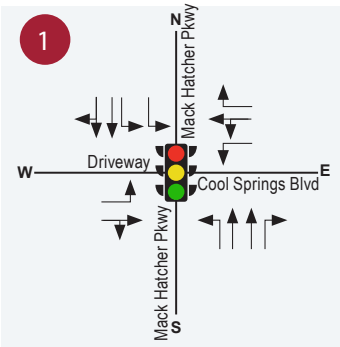
3.2 VEHICULAR VOLUMES

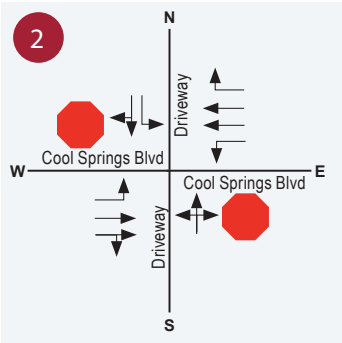
Vehicle peak hour turning movement counts (TMCs) were determined from multiple sources. New traffic counts were collected for the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1) on September 13, 2022. 2020 turning movement counts provided in the Cool Springs Transportation Study (CSTS) model were used as the base for existing counts at the intersections of Cool Springs Boulevard at Windcross Court (Intersection 3) and Cool Springs Boulevard at McEwen Drive (Intersection 4). Based on conversations with City of Franklin traffic engineering staff, the 2020 counts were considered as 2023 counts without any growth adjustment due to traffic patterns changing and/or decreasing within the study network. However, the counts were balanced with the most recent count from Mack Hatcher Parkway with magnetometer data used to determine the existing distribution between turning movements to balance accordingly. The counts for the minor street movements at the intersection of Cool Springs Boulevard at Site Driveway (Intersection 2) were taken directly from the 201 Cool Springs Boulevard (CSB) Joint TIS completed by Neel-Schaffer in 2016. The through volumes were balanced with Intersection 1. The count dates, timeframes, and observed peak hours for each study intersection are shown in **Table 2**.

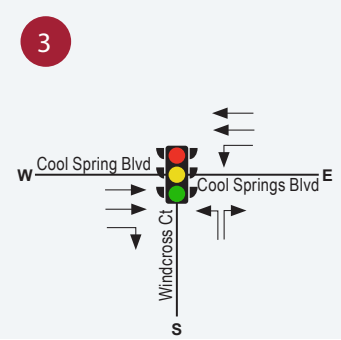
Table 2: Existing Turning Movement Count Sources

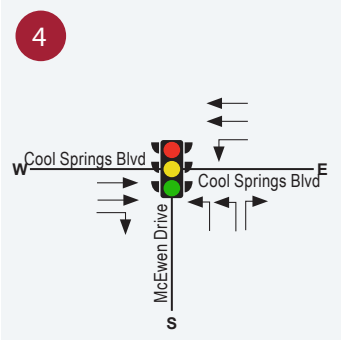
Intersection	Count Year	Count Source
1. Mack Hatcher Parkway at Cool Springs Boulevard	2022	Collected
2. Cool Springs Boulevard at Site Driveway	2022/2016	Balanced/ 201 CSB Joint TIS
3. Cool Springs Boulevard at Windcross Court	2020	Balanced/ 201 CSB Joint TIS
4. Cool Springs Boulevard at McEwen Drive	2020	CSTS Model

The Existing 2023 peak hour traffic volumes are shown in **Figure 4**. The 2022 collected traffic count data is provided in **Appendix B**.









LEGEND

- Existing Lanage
- Existing Traffic Signal
- Existing Stop Sign

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Kimley»Horn	101 Cool Springs Boulevard TIS	Existing 2023 Intersection Geometry	Figure 3

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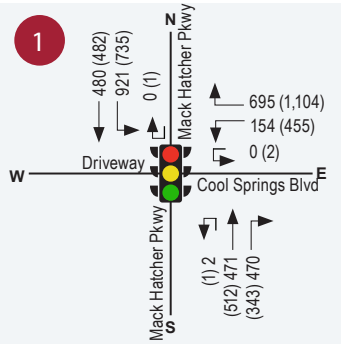

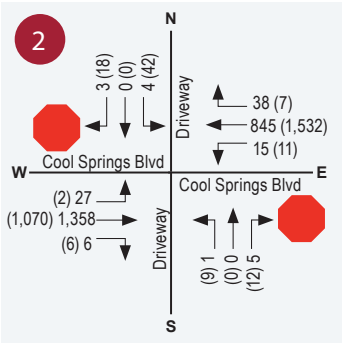

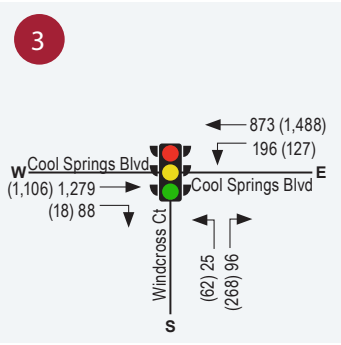

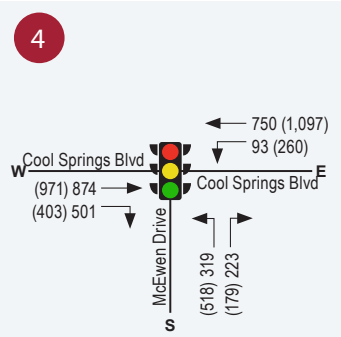

LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

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Kimley»Horn	101 Cool Springs Boulevard TIS	Existing 2023 Traffic Volumes	Figure 4

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3.3 HISTORICAL CRASH DATA

Using the *AASHTOWare Safety* tool, historical crash data from 2020-2022 was collected for the intersections and corridors in this study. Crash type, manner of collision and crash rates were collected at each location. The crash summaries are provided in **Table 3**. The 2019-2020 TDOT crash rates were collected for each intersection and segment in the study network and are provided in the table.

Table 3: Crash Summary

Location	Crash Type					Manner of Collision				Rates	
	Fatal	Serious Injury	Possible Injury	Minor Injury	PDO	Angle	No Vehicle Collision	Rear End	Sideswipe	Crash Rate	TDOT Crash Rate
Intersections											
1.Mack Hatcher Pkwy at Cool Springs Blvd	0	0	1	3	36	4	2	24	6	1.293	0.714
2.Cool Springs Blvd at Site Driveway	0	0	1	0	1	1	1	0	0	0.000	0.551
3.Cool Springs Blvd at Windcross Ct	0	0	0	0	7	1	0	4	1	0.301	0.714
4.Cool Springs Blvd at McEwen Dr	0	0	0	1	9	2	1	7	0	0.339	0.714
Segments											
Cool Springs Blvd between Mack Hatcher Parkway & Windcross Ct	0	0	1	0	2	0	1	1	1	0.595	2.027
Cool Springs Blvd between Windcross Ct & McEwen Dr	0	0	1	1	21	4	1	13	4	0.947	2.027

With the exception of the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), all intersections and segments report below their respective TDOT crash rates averages.

The intersection of Mack Hatcher Parkway at Cool Springs Boulevard shows a crash rate of 1.29 over the 0.714 TDOT average. However, although the rate is higher, data shows that only 4 of the 36 collected collisions registered 1 possible injury and 3 minor injuries. The data shows no fatal or serious injuries registered. Approximately 90% of the collisions were registered as property damage only, with over 60% being rear end collisions.

To minimize rear end collisions, it is recommended for the city to continue to monitor traffic volumes and update signal timings to minimize queuing. In addition, it is recommended that the existing traffic signal backplates be changes to yellow retro reflective backplates.

Additionally, the following improvements were discussed with the City:

- Intersection 1 – Mack Hatcher Parkway at Cool Springs Boulevard
    - Extend the existing concrete channelized island for the westbound right-turn movement to the north to provide barrier separation for the free-flow slip lane traveling west along Cool Springs Boulevard to north along Mack Hatcher Parkway
    - Extend the westbound left-turn lane to provide 735' of storage
- Intersection 2 – Cool Springs Boulevard at Site Driveway
    - With the extension of the westbound left-turn lane at the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), provide an additional turn lane pocket to provide 100' of storage for the westbound left-turn movement at Cool Springs Boulevard at Site Driveway (Intersection 2).
- Intersection 3 – Cool Springs Boulevard at Windcross Court
    - Extend the eastbound left-turn lane to provide 340' of storage
- Note: A concept graphic illustrating the recommended improvements is provided in **Appendix A**.

4.0 NO-BUILD CONDITIONS

Background traffic is defined as expected traffic on the roadway in future year(s) absent the construction and opening of the proposed project. Background traffic can include a base growth rate based on historical count data as well as population growth data and estimates.

To account for background traffic, the existing traffic volumes were increased by a growth of 2% per year for two years to account for the expected background growth through year 2025. Additionally, the existing traffic volumes were increased by a growth of 2% per year for seven years to account for the expected background growth through year 2030 for the Horizon Year analysis. Movements associated with the site driveway, commercial driveway, and Windcross Court were not grown since these were derived from existing counts or project specific trip generations.

Project trips from approved developments considered in the Cool Springs Transportation Study (CSTS) model were also added to the existing traffic in addition to the background growth rate. Additionally, project trips from The Optima Franklin development, which were not included in the CSTS model, were included in the calculations. The developments in the CSTS model have varying build-out years from now through 2030. However, for the purpose of this study, conservatively all developments were included in the 2025 background traffic projects regardless of the actual build out year of the individual development. In addition, since the CSTS model was completed in 2020, three years ago, some developments, or portions of them have been completed. These projects were excluded from the No-Build models, since traffic from these developments would have been captured in the existing counts. The assumptions for the current build-out state and peak trips included in the model are provided by approved development below in **Table 4**. **Figure 5 and 6** illustrates the Projected 2025 and 2030 No-Build traffic volumes, respectively. Volume development worksheets are provided in **Appendix C** which show the calculations for the No-Build traffic volumes.

Table 4: CSTS Model Approved Developments					
Development Name	**Build-Out Year**	**Current % Occ.**	**Daily Trips**	**AM Peak Trips**	**PM Peak Trips**
1. Liberty Station	2019	100%	0	0	0
2. Franklin Summit	N/A	0%	6,354	475	628
3. Aureum	2026	0%	20,715	1,279	1,738
4. Ovation	2030	15%	27,249	1,852	2,413
5. Huffines Ridge	2023	0%	5,365	383	441
6. Carothers Crossing West	2023	95%	203	14	14
7. Carothers Crossing East	2022	100%	0	0	0
8. Apex Village	N/A	0%	12,796	790	663
9. Franklin Park	2028	40%	23,765	1,538	1,707
10. East Works	2032	0%	30,309	2,331	2,316
11. 7086 Bakers Bridge Avenue	2022	100%	0	0	0
12. The Franklin at Legends	Removed – Added Joint TIS Trips*				
13. Mallory Green	2020	100%	0	0	0
14. McEwen Town Center	2032	20%	22,717	680	1,256
15. Avalon Square	N/A	0%	27,502	1,824	2,322
16. Vintage Franklin	2024	0%	4,695	398	420

**Trip generation for the 201/151 CSB Joint TIS was modified to remove the previous assumptions for the 101 Cool Springs Boulevard development and added to each intersection based on the distribution provided in the TIS*

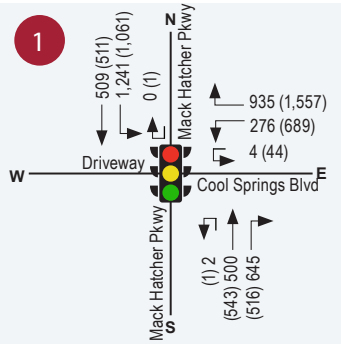
4.1 FUTURE TRANSPORTATION INFRASTRUCTURE IMPROVEMENTS

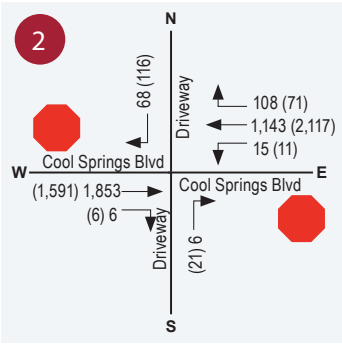
With the development of the projects listed in Table 4, the following improvements were assumed to be completed prior to the Year 2025 Build scenario, since these improvements are condition of approval for some of these development projects:

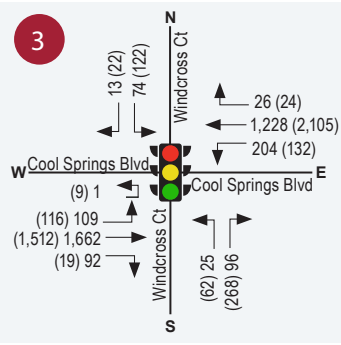
- Intersection 2: Cool Springs Boulevard at Site Driveway/Commercial Driveway
  - Convert the existing full-movement intersection to a right-in/right/out (RIRO) for the southbound approach (north leg)
  - Restripe the existing southbound left-turn lane as an additional southbound right-turn lane (north leg)
  - Prohibit northbound left-turns from exiting the existing commercial driveway (south leg)
  - Maintain allowing the westbound left-turn into the existing commercial driveway (south leg)
- Intersection 3: Cool Springs Boulevard at Windcross Court
  - Construct the north leg of the intersection with one southbound left-turn and one southbound shared through/right-turn lane
  - Restripe the northbound approach to include one northbound left-turn and one northbound shared through/right-turn lane
  - Provide protected-permissive left-turn phasing for all approaches

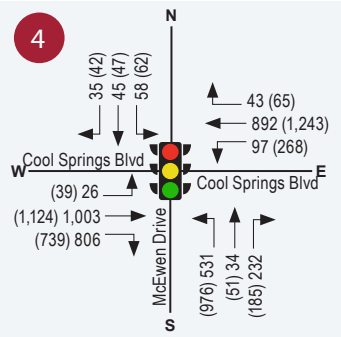
- Intersection 4: Cool Springs Boulevard at McEwen Drive
    - Construct the north leg of the intersection with one southbound left-turn lane, one southbound through lane, and one southbound right-turn lane
    - Provide a westbound right-turn lane
    - Provide an eastbound left-turn lane
    - Provide a northbound through lane
    - Provide protected-permissive left-turn phasing for the southbound, eastbound, and westbound approaches
    - Provide protected only left-turn phasing for the northbound approach

Figure 7 illustrates the intersection geometry assumed for the 2025 and 2030 No-Build conditions.









LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

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Kimley»Horn	101 Cool Springs Boulevard TIS	No-Build 2025 Traffic Volumes	Figure 5

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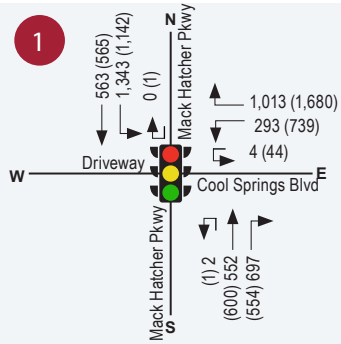

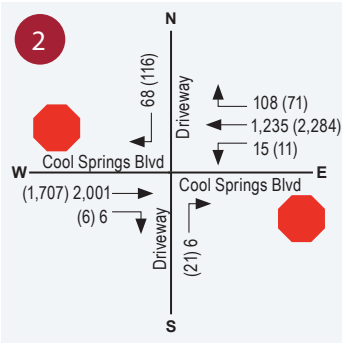

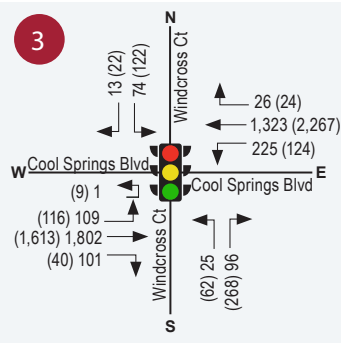

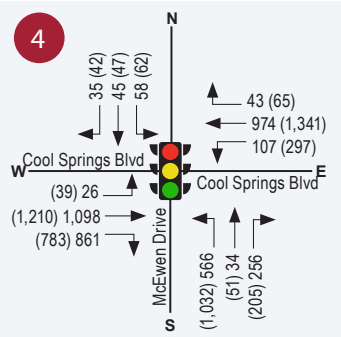

LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

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Kimley»Horn	101 Cool Springs Boulevard TIS	No-Build 2030 Horizon Traffic Volumes	Figure 6

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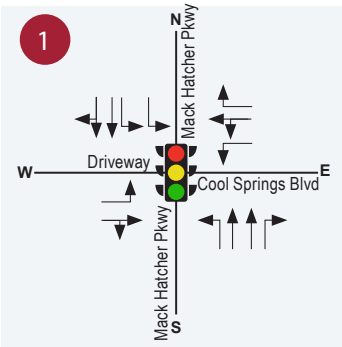

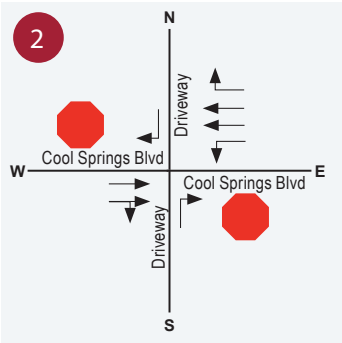

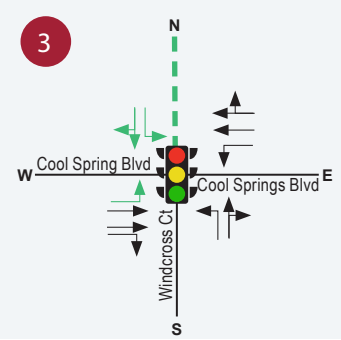

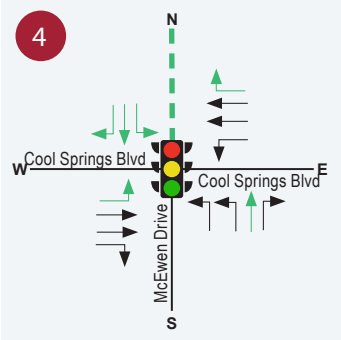

LEGEND

- Existing Laneage
- No-Build Laneage
- No-Build New Roadway
- Existing Traffic Signal
- Existing Stop Sign

N

Kimley»Horn	101 Cool Springs Boulevard TIS	No-Build Intersection Geometry	Figure 7

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5.0 BUILD CONDITIONS

5.1 SITE ACCESS AND CIRCULATION

The proposed project will have access from Intersection 2 (Cool Springs Boulevard at Commercial Driveway) and Intersection 3 (Cool Springs Boulevard and Windcross Court). Both of these intersections will be modified by others prior to this development as described in *Section 4.1*.

5.2 TRIP GENERATION

Traffic for the proposed development was calculated using rates and equations contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, *11th Edition*, using equations where available.

Internal capture (or mixed-use) reductions represent the concept that trips generated by individual land uses within a site may remain internal to the site. Mixed-use vehicle trip reductions are calculated using guidance from the *ITE Trip Generation Handbook, 3rd Edition*.

Alternative modes of transportation include pedestrians, bicyclists, and transit users. Alternate mode reductions account for the notion that some site-generated trips will occur by a means other than an automobile.

A pass-by trip occurs when a proposed development diverts traffic that is already traveling on a street adjacent to the site. Pass-by reductions are calculated using guidance from the *ITE Trip Generation Handbook, 3rd Edition*.

Although the site is likely to generate some alternative mode and/or pass-by trips, the trip generation for the site was determined with only internal capture reductions to the gross trips in order to present a more conservative analysis. However, the internal capture reductions were conservatively limited to 10% for the retail use.

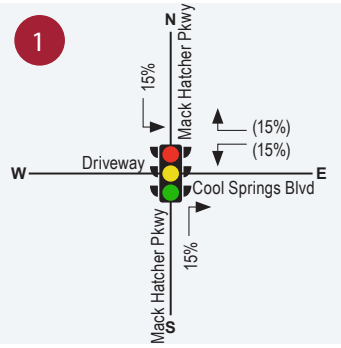
Table 5 summarizes the project trip generation. **Appendix C** provides a detailed trip generation worksheet for the proposed development.

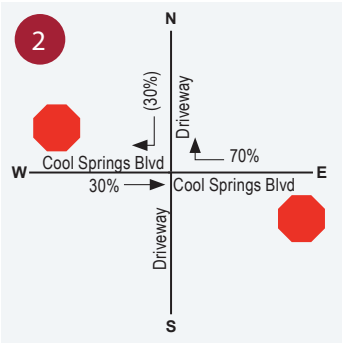
Table 5: Trip Generation								
ITE Code	Land Use	Density	Daily		AM Peak Hour		PM Peak Hour	
			Enter	Exit	Enter	Exit	Enter	Exit
220	Multifamily Housing (Low-Rise)	178 units	608	608	19	59	61	36
822	Strip Retail Plaza (<40ksf) (Proposed)	3,500 SF	189	189	8	6	19	18
Gross Trips			**797**	**797**	**27**	**65**	**80**	**54**
Reduction – Internal Capture			*-19*	*-19*	*0*	*0*	*-2*	*-2*
New Trips			**778**	**778**	**27**	**65**	**78**	**52**

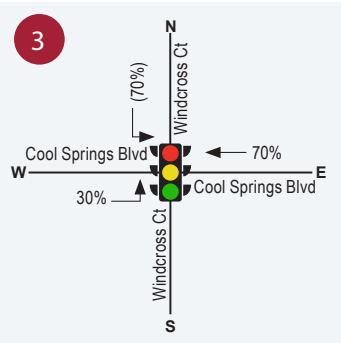
5.3 TRIP DISTRIBUTION AND ASSIGNMENT

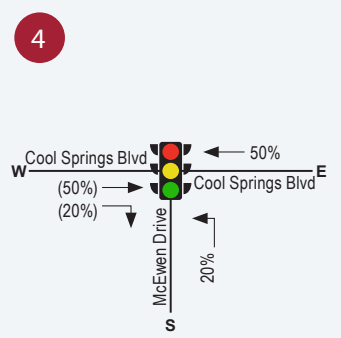
The directional distribution and assignment of new project trips was based on a review of land uses and population densities in the area and the existing peak hour turning movement counts. **Figure 8** illustrates the directional distribution and assignment of new project trips. **Figure 9** illustrates the assignment of project trips to the study network. The Projected 2025 and 2030 Build peak hour volumes are shown in **Figure 10 and 11,** respectively.

Appendix C provides intersection volume worksheets for all intersections and driveways within the study network.









LEGEND

→	Turning Movement	XX	% Entering Trips
	Existing Traffic Signal	(XX)	% Exiting Trips
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	Trip Distribution & Assignment	Figure 8

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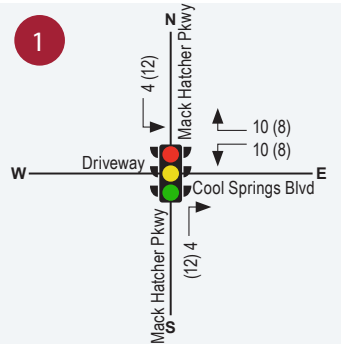

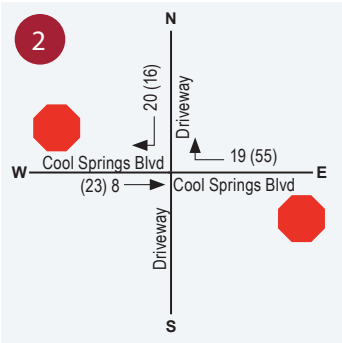

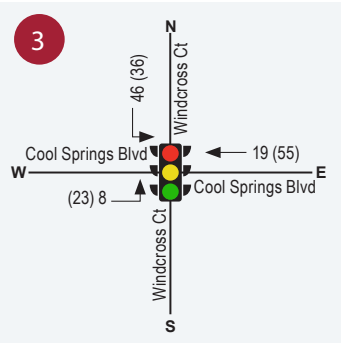

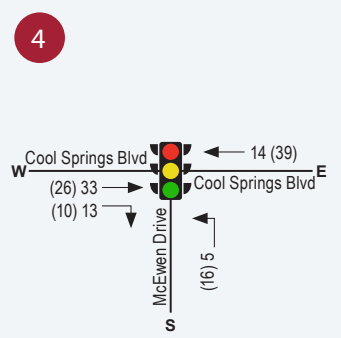

LEGEND

→	Turning Movement	XX	AM Peak Hour Project Trips
	Existing Traffic Signal	(XX)	PM Peak Hour Project Trips
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	Project Trips	Figure 9

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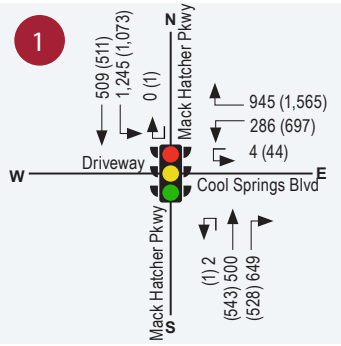

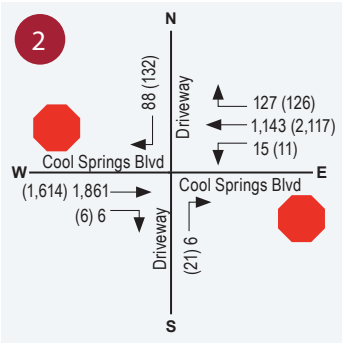

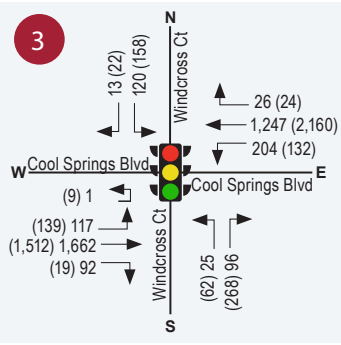

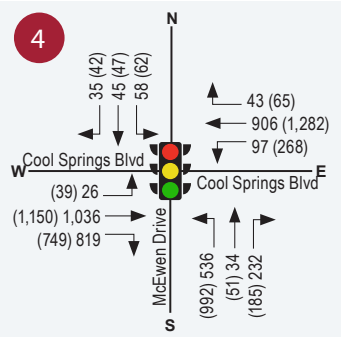

LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	2025 Build Traffic Volumes	Figure 10

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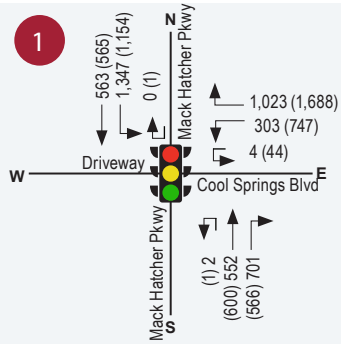

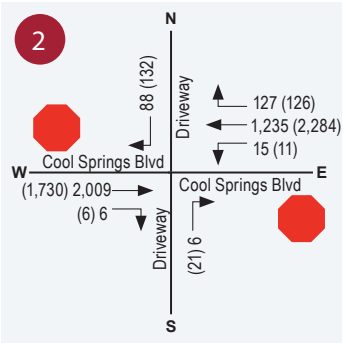

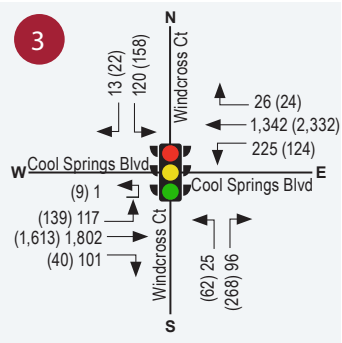

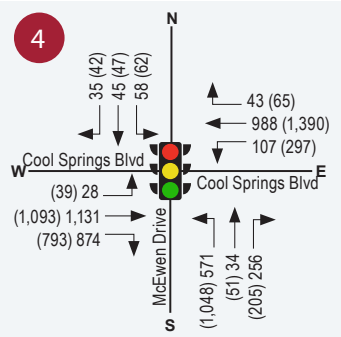

LEGEND

→	Turning Movement	XX	AM Peak Hour Traffic Volume
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volume
	Existing Stop Sign		

N

Kimley»Horn	101 Cool Springs Boulevard TIS	2030 Build Traffic Volumes	Figure 11

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6.0 CAPACITY ANALYSES

6.1 INTERSECTION CAPACITY ANALYSIS

Level-of-service (LOS) determinations were made for the weekday AM and PM peak hours for the study network intersections using *Synchro, Version 11.0. Synchro* software uses methodologies contained in the *Highway Capacity Manual, 6th Edition* to determine the operating characteristics of an intersection. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a specified period under prevailing roadway, traffic, and control conditions.

LOS is used to describe the operating characteristics of a road segment or intersection in relation to its capacity. LOS is defined as a qualitative measure that describes operational conditions and motorists' perceptions of a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A being the best and F the worst.

Levels-of-service for unsignalized intersections, with stop control on the minor street only, are reported for the side-street approaches and major street left-turns. Low levels-of-service for side street approaches are not uncommon, as vehicles may experience significant delay turning onto a major roadway.

Levels-of-service for signalized intersections are reported for the intersection as a whole. One or more movements at an intersection may experience a low level-of-service, while the intersection as a whole may operate acceptably.

Note: Due to software limitations, U-turn movements were added to the adjacent left-turn or through movements (depending on intersection configuration) to include those volumes in the analyses.

The results of the capacity analyses are summarized in **Table 8**. The *Synchro* analyses reports are included in **Appendix D**.

Table 6: Level-of-Service Summary *(Delay in Seconds)*												
Intersection	Control	Approach/ Movement	Existing 2023		No-Build 2025		Build 2025		No-Build 2030 Horizon Year		Build 2030 Horizon Year	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Mack Hatcher Pkwy at Cool Springs Blvd	Signal	NBT	B (19.6)	C (31.2)	D (36.3)	E (56.2)	D (36.3)	E (56.9)	D (37.6)	E (63.7)	D (37.6)	E (64.5)
		NBR	C (21.2)	B (18.3)	D (51.2)	C (33.9)	D (52.3)	C (34.4)	E (69.6)	D (35.9)	E (71.2)	D (36.5)
		SBL	D (43.0)	E (58.3)	D (48.5)	D (54.7)	D (48.9)	D (54.9)	E (63.2)	E (57.5)	E (64.0)	E (58.2)
		SBT	A (2.7)	A (5.6)	A (4.7)	B (10.6)	A (4.7)	B (10.7)	A (4.8)	B (11.5)	A (4.8)	B (11.6)
		WBL	D (46.1)	E (76.9)	D (50.0)	E (68.9)	D (50.4)	E (69.1)	D (50.8)	E (70.7)	D (51.4)	E (71.1)
		WBR	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
		NB	C (20.4)	C (26.0)	D (44.7)	D (45.3)	D (45.3)	D (45.8)	E (55.4)	D (50.3)	E (56.4)	D (50.9)
		SB	C (29.2)	D (37.4)	D (35.8)	D (40.3)	D (36.1)	D (40.7)	D (46.0)	D (42.3)	D (46.6)	D (42.9)
		WB	D (46.1)	E (76.9)	D (50.0)	E (68.9)	D (50.4)	E (69.1)	D (50.8)	E (70.7)	D (51.4)	E (71.1)
		Overall	C (26.9)	D (40.7)	D (40.3)	D (48.1)	D (40.7)	D (48.5)	D (49.8)	D (50.9)	D (50.5)	D (51.5)
2. Cool Springs Blvd at Commercial Dwy/Site Dwy	TWSC	NB	C (19.4)	C (23.1)	C (19.8)	C (17.6)	C (19.9)	C (17.9)	C (21.7)	C (18.9)	C (21.8)	C (19.2)
		SB	C (20.8)	F (67.8)	B (14.7)	E (46.4)	C (15.3)	F (54.2)	C (15.6)	F (61.3)	C (16.3)	F (74.6)
		EBL	B (10.1)	B (14.1)								
		WBL	B (12.9)	B (11.0)	C (17.9)	B (14.9)	C (18.0)	C (15.1)	C (20.0)	C (16.0)	C (20.1)	C (16.3)

Table 6: Level-of-Service Summary *(Delay in Seconds)*												
Intersection	Control	Approach/ Movement	Existing 2023		No-Build 2025		Build 2025		No-Build 2030 Horizon Year		Build 2030 Horizon Year	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
3. Cool Springs Blvd at Windcross Ct	Signal	NBL	D (39.6)	F (86.1)	D (47.4)	E (61.8)	D (47.4)	E (60.9)	D (47.4)	E (60.8)	D (47.4)	E (60.0)
		NBT			A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
		NBR	D (54.2)	F (113.1)	F (82.2)	F (94.5)	F (82.2)	F (95.5)	F (82.2)	F (95.6)	F (82.2)	F (96.6)
		SBL			D (49.2)	E (77.6)	D (54.4)	F (114.9)	D (49.2)	E (71.3)	D (54.4)	F (99.0)
		SBT			A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
		SBR			D (48.9)	E (64.2)	D (47.9)	E (63.3)	D (48.9)	E (62.3)	D (47.9)	E (61.4)
		EBL			B (13.5)	E (72.1)	B (14.7)	E (78.5)	B (15.0)	F (84.0)	B (16.6)	F (92.0)
		EBT	B (10.4)	A (5.8)	C (27.1)	B (19.6)	C (28.9)	C (20.4)	D (35.6)	C (22.6)	D (39.1)	C (23.6)
		EBR	A (6.4)	A (3.8)	B (11.6)	A (7.5)	B (12.1)	A (7.8)	B (11.7)	A (8.1)	B (12.2)	A (8.5)
		WBL	B (12.9)	A (4.4)	E (60.4)	C (22.4)	E (64.1)	C (23.2)	F (113.7)	C (28.8)	F (120.3)	C (29.0)
		WBT	A (0.3)	A (0.5)	B (16.2)	C (31.3)	B (17.2)	E (68.9)	B (17.1)	F (81.2)	B (18.2)	F (109.8)
		WBR			B (16.1)	C (32.0)	B (17.1)	E (70.3)	B (17.1)	F (82.9)	B (18.1)	F (111.5)
		NB	D (51.2)	F (101.5)	E (75.0)	F (83.4)	E (75.0)	F (84.2)	E (75.0)	F (84.3)	E (75.0)	F (85.3)
		SB			D (49.2)	E (75.5)	D (53.7)	F (108.6)	D (49.2)	E (69.9)	D (53.7)	F (94.4)
		EB	B (10.1)	A (5.8)	C (25.6)	C (23.4)	C (27.2)	C (25.4)	C (33.3)	C (26.6)	D (36.5)	C (28.9)
		WB	A (2.6)	A (0.8)	C (22.4)	C (31.1)	C (23.6)	E (67.0)	C (30.9)	E (79.3)	C (32.6)	F (106.6)
		Overall	A (8.9)	A (7.8)	C (26.5)	C (31.8)	C (28.3)	D (53.4)	C (34.0)	E (58.6)	D (36.7)	E (75.1)

Table 6: Level-of-Service Summary *(Delay in Seconds)*												
Intersection	Control	Approach/ Movement	Existing 2023		No-Build 2025		Build 2025		No-Build 2030 Horizon Year		Build 2030 Horizon Year	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
4. Cool Springs Blvd at McEwen Dr	Signal	NBL	D (49.4)	F (94.5)	D (52.3)	E (75.1)	D (52.3)	E (78.9)	D (52.4)	F (133.4)	D (52.4)	F (140.3)
		NBT			D (36.6)	D (37.1)	D (36.5)	D (37.1)	D (35.7)	D (40.7)	D (35.5)	D (40.7)
		NBR	D (53.5)	D (53.5)	D (36.8)	C (24.5)	D (36.6)	C (24.5)	D (35.9)	C (28.1)	D (35.7)	C (28.1)
		SBL			E (66.6)	F (103.0)	E (66.6)	F (103.0)	E (66.6)	F (103.2)	E (66.6)	F (103.2)
		SBT			D (54.2)	E (77.7)	D (54.2)	E (77.7)	D (54.2)	E (77.7)	D (54.2)	E (77.7)
		SBR			D (54.2)	E (70.1)	D (54.2)	E (70.1)	D (54.2)	E (70.1)	D (54.2)	E (70.1)
		EBL			E (61.3)	F (90.3)	E (60.9)	F (89.2)	E (59.2)	F (88.0)	E (59.2)	F (86.8)
		EBT	B (12.1)	B (16.9)	C (28.5)	F (108.2)	C (29.1)	F (117.8)	C (31.3)	F (94.3)	C (32.1)	F (102.7)
		EBR	A (7.5)	A (5.5)	C (21.4)	C (26.2)	C (21.7)	C (26.5)	C (23.5)	C (28.2)	C (24.7)	C (28.4)
		WBL	A (8.1)	B (16.5)	E (78.0)	F (133.8)	E (78.0)	F (133.8)	F (80.5)	F (172.0)	F (80.5)	F (172.0)
		WBT	A (5.3)	A (8.9)	C (23.8)	D (47.8)	C (24.2)	D (50.2)	C (26.0)	D (45.2)	C (26.4)	D (47.5)
		WBR			B (17.0)	C (22.5)	B (17.1)	C (22.5)	B (17.6)	B (19.8)	B (17.7)	B (19.8)
		NB	D (51.1)	F (84.0)	D (47.1)	E (65.8)	D (47.1)	E (69.0)	D (46.8)	F (113.0)	D (46.8)	F (118.8)
		SB			E (59.4)	F (85.9)	E (59.4)	F (85.9)	E (59.4)	F (86.0)	E (59.4)	F (86.0)
		EB	B (10.4)	B (13.6)	C (25.8)	E (76.0)	C (26.3)	F (81.9)	C (28.3)	E (68.7)	C (29.2)	E (73.9)
		WB	A (5.6)	B (10.3)	C (28.6)	E (61.4)	C (28.8)	E (63.0)	C (30.9)	E (66.3)	C (31.1)	E (67.7)
		Overall	B (16.9)	C (26.6)	C (32.3)	E (69.0)	C (32.5)	E (72.6)	C (33.9)	E (79.4)	C (34.4)	F (83.3)

Substandard MOVEMENT LOS per City of Franklin guidelines

Substandard OVERALL LOS per City of Franklin guidelines

The City of Franklin Traffic Impact Study (TIS) Guidelines define the substandard LOS for intersection turning movements as LOS F and the overall intersection as LOS E and LOS F.

Under existing PM conditions, the southbound approach at the intersection of Cool Springs Boulevard and Site Driveway (Intersection 2) operates at LOS F. Low levels-of-service for side street approaches are not uncommon, as vehicles may experience significant delay turning onto a major roadway. However, this is projected to be mitigated or reduced with the No-Build improvements prohibiting minor street left-turns. Delay and queues associated with this approach are only impacting the site and do not impact the through movements along Cool Springs Boulevard. The northbound left and northbound right movements at the intersection of Cool Springs Boulevard at Windcross Court (Intersection 3) operates at LOS F during the PM peak hour. Additionally, the northbound left movement at the intersection of Cool Springs Boulevard at McEwen Drive (Intersection 4) operates at LOS F during the PM peak hour.

Under No-Build AM conditions, the northbound right movement at the intersection of Cool Springs Boulevard and Windcross Court (Intersection 3) is projected to operate at LOS F. Under No-Build PM conditions, the northbound right movement at the intersection of Cool Springs Boulevard and Windcross Court (Intersection 3) and the southbound left, eastbound left, eastbound through, and westbound left movements at Cool Springs Boulevard and McEwen Drive (Intersection 4) are projected to operate at LOS F. Windcross Court and McEwen Drive (Intersection 4) is projected to operate at overall LOS E during the No-Build PM peak. The No-Build conditions represent the projected traffic conditions without the *101 Cool Springs Boulevard* development.

Under the Build conditions, the substandard LOS from the No-Build conditions are projected to continue for the same movements with the addition of the southbound right movement at the intersection of Cool Springs Boulevard at Site Driveway (Intersection 2) and the southbound left movement at the intersection of Cool Springs Boulevard and Windcross Court (Intersection 3). Windcross Court and McEwen Drive (Intersection 4) is projected to operate at overall LOS E during the PM peak with an increase in delay of 3.2 seconds.

Under 2030 Horizon Year No-Build and Build conditions, delays will continue to increase with substandard movement and overall LOS indicated by the highlighted cells in the tables above.

6.2 QUEUEING ANALYSIS

The *Highway Capacity Manual 6th Edition* provides insight and guidance regarding the back of queue for signalized intersections.

"The back-of-queue position is the position of the vehicle stopped farthest from the stop line during the cycle as a consequence of the display of a red signal indication. The back-of-queue size depends on the arrival pattern of vehicles and on the number of vehicles that do not clear the intersection during the previous cycle." (Source: *Highway Capacity Manual 6th Edition*, Chapter 19)

A queueing analysis was performed using *Synchro* software to evaluate and determine the forecasted 95th percentile queue lengths for all signalized intersections within the study area. The queue lengths are summarized in **Table 9**. The 95th percentile queueing reports are included in the *Synchro* Reports, in **Appendix D**.

95th percentile queue lengths that are projected to exceed the available storage are indicated by the highlighted cells in the table below. As noted previously in *Section 3.3*, recommendations have been made to improve some storage lengths within the study network. For the purposes of the comparison table below, the existing storage lengths have been provided and compared to the projected queue lengths. The storage improvements are not incorporated into the table below.

Table 7: 95th Percentile Queue Results *(Length in Feet)*													
Intersection	Control	Approach/ Movement	Storage Length (ft)	Existing 2023		No-Build 2025		Build 2025		No-Build 2030 Horizon Year		Build 2030 Horizon Year	
				AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Mack Hatcher Pkwy at Cool Springs Blvd	Signal	NBT	-	164	301	238	376	238	376	264	#448	264	#448
		NBR	1000	267	251	#520	526	#527	545	#618	591	#624	614
		SBL	1000	#393	418	#638	642	#641	653	#727	#1415	#730	#1430
		SBT	-	61	104	80	149	80	149	90	166	90	166
		WBL	-	70	323	148	m313	150	m302	143	m369	m146	m363
		WBR	230	29	1025	535	m946	531	m887	566	m#1052	564	m#989
2. Cool Springs Blvd at Commercial Dwy/Site Dwy	TWSC	NB	-	3	7.5	2.5	5	2.5	5	2.5	7.5	2.5	7.5
		SB	-	3	57.5	15	85	20	107.5	15	105	22.5	130
		EBL	270	3	0								
		WBL	335	3	2.5	5	2.5	5	2.5	5	2.5	5	2.5
3. Cool Springs Blvd at Windcross Ct	Signal	NBL	-	41	125	43	107	43	107	43	110	43	110
		NBT				0	#335	0	#347	0	#443	1	#460
		NBR	150	47	#300	0	0	0	0	0	0	0	0
		SBL				97	#207	147	#307	97	198	147	#285
		SBT				0	0	0	0	0	0	0	0
		SBR				0	0	0	0	0	0	0	0
		EBL	260			m31	m126	m34	m160	m29	m36	m31	m42
		EBT	-	m431	516	m785	940	m781	941	m788	m313	m785	m314
		EBR	300	m16	m4	m10	m0	m10	m0	m11	m0	m11	m0
		WBL	235	m98	m16	#289	m82	#287	m80	#337	m68	#330	m65
		WBT	-	60	m107	432	m#1593	440	m#1644	478	m#1477	487	m#1527
		WBR				0	0	0	0	0	0	0	0
4. Cool Springs Blvd at McEwen Dr	Signal	NBL	-	#172	#428	265	#717	269	#736	285	#821	288	#840
		NBT				49	80	49	80	49	81	49	81
		NBR	300	127	140	153	111	153	111	174	152	174	152
		SBL				96	123	96	123	96	124	96	124
		SBT				77	100	77	100	77	100	77	100
		SBR				0	0	0	0	0	0	0	0
		EBL				m29	m59	m27	m58	m27	m57	m25	m56
		EBT	-	103	m121	m386	m#889	m405	m#895	m380	m#891	m419	m#918
		EBR	260	0	m17	m31	m779	m10	m754	m13	m817	m8	m812
		WBL	260	32	129	139	#516	139	#516	#167	#604	#167	#604
		WBT	-	106	275	404	803	412	#884	454	#919	462	#967
		WBR				0	15	0	15	0	14	0	14

Definitions

m = Volume for 95th percentile queue is metered by upstream signal

= 95th percentile volume exceeds capacity, queue may be longer

7.0 CONCLUSION

This traffic study re-evaluated the traffic impacts associated with the *101 Cool Springs Boulevard* development located north of Cool Springs Boulevard and east of Mack Hatcher Parkway within the City of Franklin, Tennessee. The development, which is approximately 2.91-acres in size, will include multifamily housing with approximately 178 dwelling units and 3,500 SF of retail space. The development of the 101 Cool Springs Boulevard site was previously evaluated as a 60,000 sf office complex and included in the Join TIA prepared for the 101, 151 and 201 Cool Springs Boulevard sites. Due to the change in land uses proposed for the 101 Cool Springs Boulevard Site and a slight increase in the expected trip generation, a re-evaluation was requested by the City of Franklin.

7.1 NO-BUILD IMPROVEMENT RECOMMENDATIONS

The following development improvements are recommended to serve the Projected 2025 No-Build traffic conditions (Note: this would be the improvements needed to serve the background traffic and is unrelated to the *101 Cool Springs Boulevard* development).

- All Intersections
    - It is recommended for the City to continue to monitor actual traffic patterns and volumes and develop updated signal timing plans in order to optimize intersection operations and minimize delays and queue as approved developments continue to develop in the area

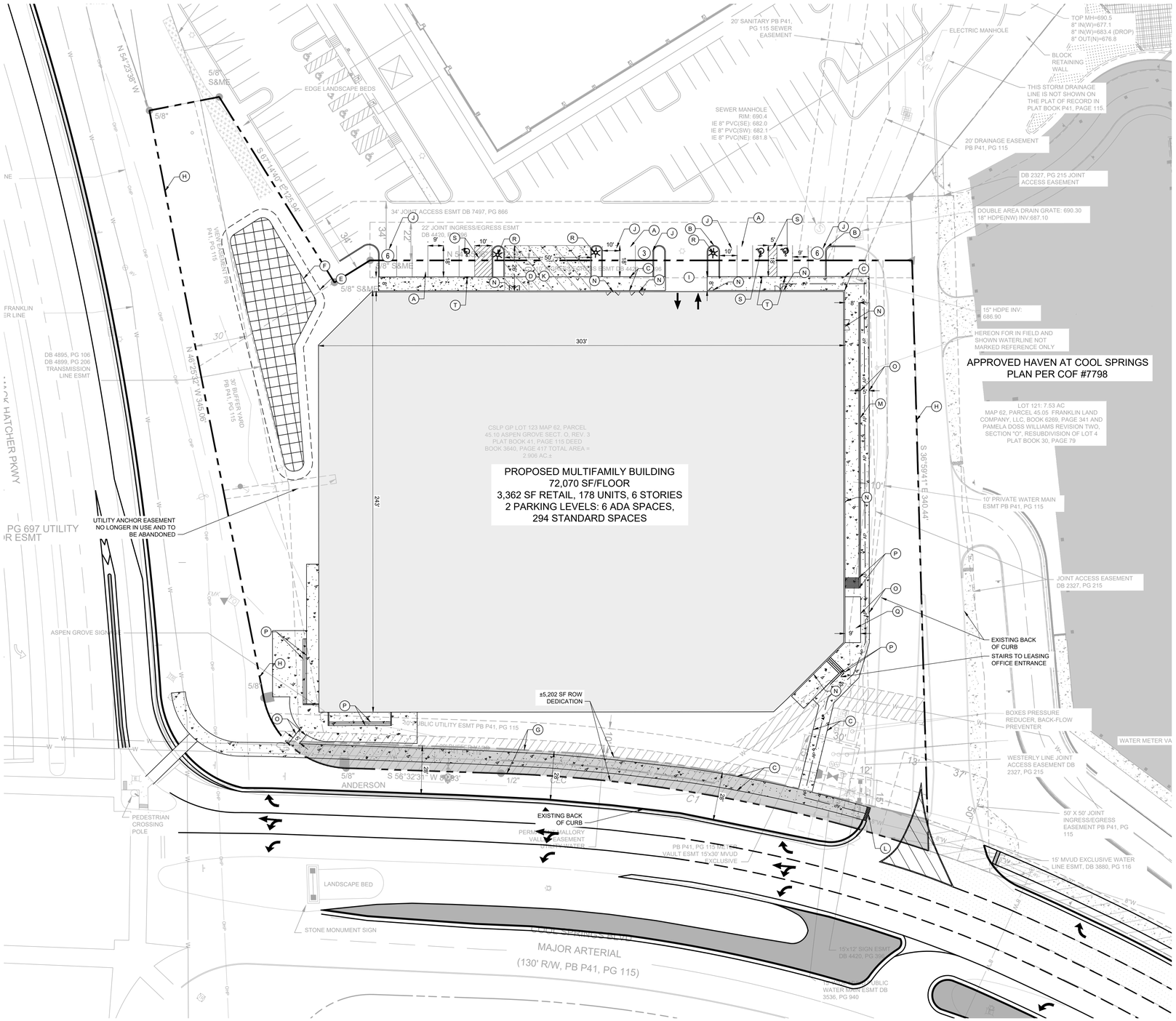
7.2 DEVELOPMENT IMPROVEMENT RECOMMENDATIONS

Based on the results of this traffic impact study, Kimley-Horn and Associates, Inc. recommends the following development improvements to serve the Projected 2025 Build traffic conditions (Note: this would be the improvements needed to serve the traffic associated with the *101 Cool Springs Boulevard* development).

- Intersection 1 – Mack Hatcher Parkway at Cool Springs Boulevard
  - Replace all existing traffic signal backplates with new retroreflective yellow backplates
  - Extend the existing concrete channelized island for the westbound right-turn movement to the north to provide barrier separation for the free-flow slip lane traveling west along Cool Springs Boulevard to north along Mack Hatcher Parkway
  - Extend the westbound left-turn lane to provide 735' of storage
- Intersection 2 – Cool Springs Boulevard at Site Driveway
  - With the extension of the westbound left-turn lane at the intersection of Mack Hatcher Parkway at Cool Springs Boulevard (Intersection 1), provide an additional turn lane pocket to provide 100' of storage for the westbound left-turn movement at Cool Springs Boulevard at Site Driveway (Intersection 2).
- Intersection 3 – Cool Springs Boulevard at Windcross Court
  - Extend the eastbound left-turn lane to provide 340' of storage
  - Note: A concept graphic illustrating the recommended improvements is provided in **Appendix A**.

APPENDIX A

Site Plan



SITE DATA TABLE

PROJECT NAME:	101 COOL SPRINGS BOULEVARD PUD SUBDIVISION
COF PROJECT #:	8157
MAP:	MAP #94062G
PARCEL #:	062--04510
ADDRESS:	101 COOL SPRINGS BLVD
CITY:	FRANKLIN
COUNTY:	WILLIAMSON
STATE:	TENNESSEE
CIVIL DISTRICT:	10TH CIVIL DISTRICT
EXISTING ZONING:	RC-6 REGIONAL COMMERCE 6
PROPOSED ZONING:	PD-PLANNED DISTRICT (61.3 DUA/3,362 SF COMMERCIAL)
OTHER APPLICABLE OVERLAYS:	500' BUFFER OF HILLSIDE OVERLAY
DEVELOPMENT STANDARD:	TRADITIONAL
ACREAGE OF LOT 123:	2.906 ACRES
ACREAGE OF ACCESS ESMT:	0.77 ACRES
TOTAL ACREAGE OF SITE:	2.906 ACRES
TOTAL SQUARE FOOTAGE OF SITE:	126,583 SF
OWNERS:	CSLP GP
ADDRESS:	85 SOUTH SERVICE RD PLAINVIEW, NY 10803
PHONE:	631-414-8484
EMAIL:	mr@mrechler.com
CONTACT NAME:	MITCHELL RECHLER
APPLICANT:	GAMBLE DESIGN COLLABORATIVE (GDC)
ADDRESS:	3020 STANSBERRY LANE, SUITE 201 FRANKLIN, TN 37069
PHONE:	615-975-5765
EMAIL:	GREG.GAMBLE@GDC-TN.COM
CONTACT NAME:	GREG GAMBLE, RLA
BUILDING SETBACKS:	15' FRONT, 15' SIDE AND REAR
BUILDING SQUARE FOOTAGE:	504,490 SF
STORIES:	6
DENSITY:	178 UNITS: 61.3 DUA
BUILDING CONSTRUCTION TYPE:	TYPE 3
MAXIMUM BUILDING HEIGHT:	85' - 0" PER 2018 IBC
PROPOSED BUILDING HEIGHT:	84' - 0"
MINIMUM LANDSCAPE SURFACE RATIO:	20%
PROVIDED LANDSCAPE SURFACE RATIO:	34.5%; 43,746 SF
MINIMUM PARKING REQUIREMENT:	311 SPACES 1.5 SPACES PER 1 BEDROOM (134 UNITS) 2.5 SPACES PER 2 BEDROOM (44 UNITS)
EXISTING PARKING:	0 SPACES
TOTAL PARKING PROVIDED:	315 TOTAL SPACES (300 IN GARAGE; 15 EXTERIOR)
PARKLAND DEDICATION:	178 UNITS = $766,112; FEES TO BE PAID WITH FINAL PLAT; QUAD 1

NOTES:

1. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
2. THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE CITY OF FRANKLIN STANDARDS AND THE APPROVAL OF PLANNING COMMISSION. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY EITHER RELEVANT DEPARTMENT SUPERINTENDENT OR THE PLANNING COMMISSION.
3. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FLIPZONE 4100 AND NAD 83 DATUM.
4. BASE INFORMATION HAS BEEN TAKEN FROM TWO ALTA SURVEYS PROVIDED BY CEC INC, PERFORMED BY MICHAEL K. STORY DATED 02-23-22 AND 9-14-22. THE INFORMATION PROVIDED SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. KIMLEY-HORN AND ASSOCIATES SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND COMPLETENESS OF THE BASE INFORMATION SHOWN.
5. THE CONSULTANT HAS FOUND NO EVIDENCE OF THE MINERAL RIGHTS OF THIS PROPERTY BEING TRANSFERRED TO ANY PARTY OTHER THAN THE OWNER.
6. NO PROPOSED BUILDINGS IN THIS PROJECT FALL WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47187C0204F, DATED SEPTEMBER 29, 2006

SITE PLAN KEYNOTE LEGEND

- (A) 9' X 18' PROPOSED PARKING SPACE (TYP.)
- (B) 6" PROPOSED POST CURB (TYP.)
- (C) 8' SIDEWALK (TYP.)
- (D) REFUSE COLLECTION AREA
- (E) GREEN INFRASTRUCTURE EASEMENT (GIE)
- (F) BIORETENTION POND
- (G) DEDICATED ROW PER CONNECT FRANKLIN PLANS
- (H) EXISTING PROPERTY LINE
- (I) PARKING GARAGE ENTRANCE
- (J) 10'X18' PROPOSED END PARKING SPACE (TYP.)
- (K) DESIGNATED LOADING AREA
- (L) ADA CURB RAMP
- (M) MAX 8' RETAINING WALL
- (N) ENTRANCE/EXIT
- (O) 5' SIDEWALK (TYP.)
- (P) EXTERIOR STAIRS
- (Q) LANDSCAPE BED
- (R) RELOCATED LIGHT POLE
- (S) ADA PARKING STRIPING
- (T) ADA PARKING SIGNAGE

COMPREHENSIVE REVIEW AT SITE PLAN

COMPREHENSIVE REVIEW OF ROADWAY, STORMWATER, AND UTILITY ELEMENTS BY CITY OF FRANKLIN STAFF WILL OCCUR AT SITE PLAN. PROJECT ENTITLEMENTS APPROVED WITH THIS DEVELOPMENT PLAN DO NOT CONSTITUTE APPROVAL OF THE ROADWAY, STORMWATER, AND UTILITY ELEMENTS SHOWN ON THE DEVELOPMENT PLAN. IF, UPON APPLICATION OF CITY OF FRANKLIN STREET, STORMWATER, AND UTILITY STANDARDS AT SITE PLAN, THE APPLICANT CANNOT ACHIEVE THE MAXIMUM APPROVED ENTITLEMENTS, THE APPLICANT SHALL BE CONFINED TO THE ENTITLEMENTS ACHIEVABLE FROM THE APPLICATION OF SAID STANDARDS.

CROSS ACCESS NOTE

IN THE EVENT THAT 151 OR 201 COOL SPRINGS BOULEVARD DOES NOT MOVE FORWARD WITH CONSTRUCTION, THIS DEVELOPMENT SHALL INSTALL THE ACCESS ROAD AND ASSOCIATED STORMWATER TREATMENT AS PART OF THE SITE PLAN SUBMITTAL, TO PROVIDE A FULL ACCESS AT COOL SPRINGS BOULEVARD AND WINDCROSS COURT.

THE CONNECTION TO WINDCROSS MUST BE UNDER CONSTRUCTION PRIOR TO A BUILDING PERMIT FOR THIS SITE AND MUST BE COMPLETED AND ACCEPTED PRIOR TO THE FIRST CERTIFICATE OF OCCUPANCY.

OFFSITE IMPROVEMENTS NOTE

SEE OFFISTE ROADWAY IMPROVEMENTS EXHIBIT FOR DETAILS AND CALLOUTS PERTAINING TO OFFSITE IMPROVEMENTS.

GRAPHIC SCALE IN FEET
0 15 30 60

NORTH

Kimley»Horn
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101 COOL SPRINGS BOULEVARD PUD SUBDIVISION

FRANKLIN, TENNESSEE

RYAN McMASTER
REGISTERED ENGINEER
AND LICENSED
COMMERCE
NO. 108058
STATE OF TENNESSEE
2023-05-04

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LJA
DRAWN BY:	SAS
CHECKED BY:	RLM
DATE:	5-4-2023
KIMLEY-HORN PROJECT NO. 118479000	

OVERALL SITE PLAN

SHEET NUMBER
C2.0

COF #8157

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

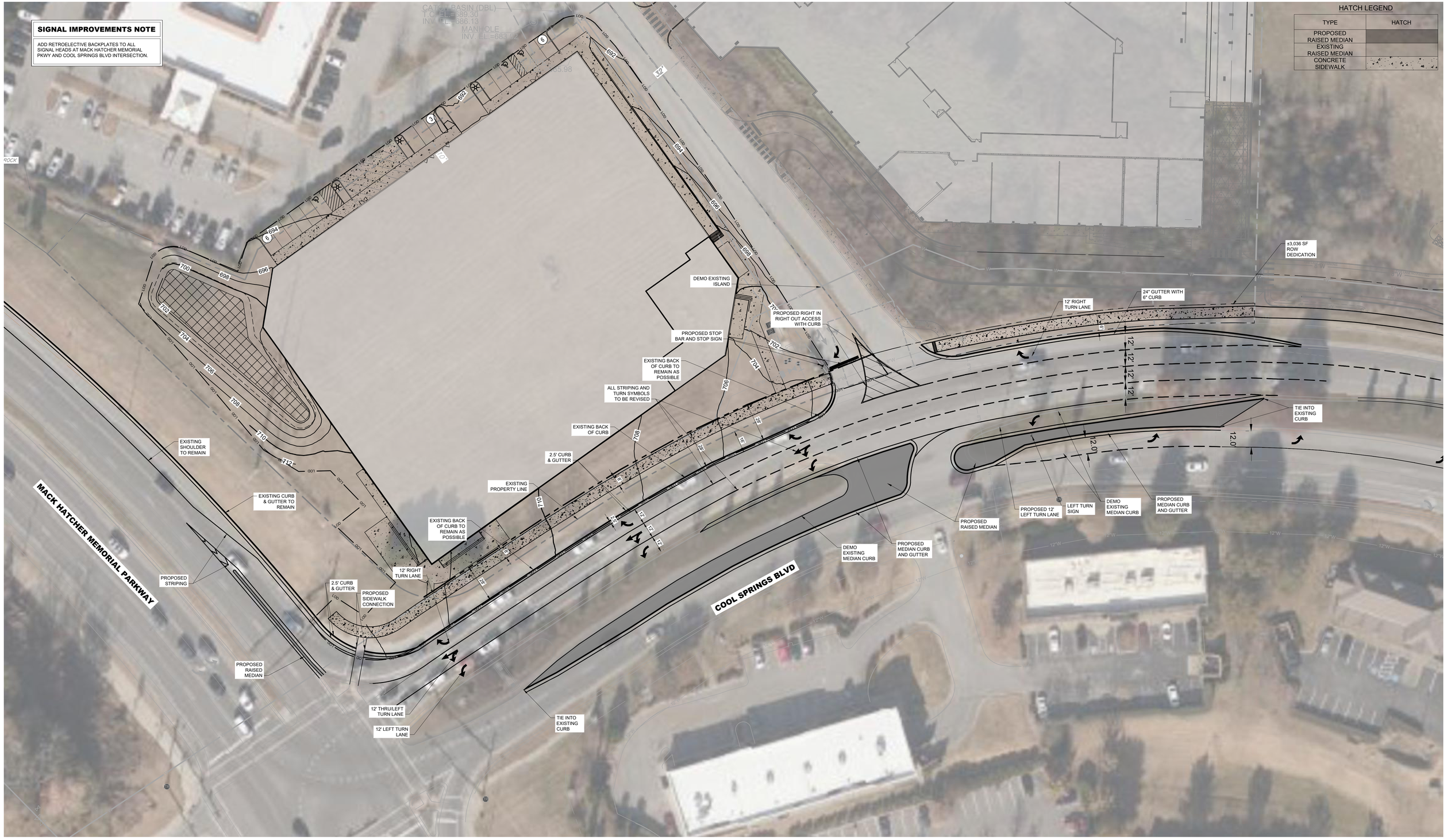
Drawing name: K:\FRA_LDEV\118479000 - Cool Springs Boulevard\4-CADD\PlanSheets\Development Plan\C2.0 OVERALL SITE PLAN.dwg C2.0 OVERALL SITE PLAN May 03, 2023 4:06pm by: Noah.Seethaler

SIGNAL IMPROVEMENTS NOTE

ADD RETROELECTIVE BACKPLATES TO ALL SIGNAL HEADS AT MACK HATCHER MEMORIAL PKWY AND COOL SPRINGS BLVD INTERSECTION.

HATCH LEGEND

TYPE	HATCH
PROPOSED RAISED MEDIAN	
EXISTING RAISED MEDIAN	
CONCRETE SIDEWALK	



Kimley»Horn

101 COOL SPRINGS BLVD

OFFSITE IMPROVEMENTS

May 3, 2023

0 15 30 60 90

NORTH

APPENDIX B

Traffic Count Data

Peak Hour Turning Movement Count

Franklin, TN

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, August 30, 2022	
Period	0700 - 0900
Peak Hour	0730 - 0830

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	122	117	1	240	207	128	0	0	335	0	0	0	0	0	33	0	195	0	228	803
0745 - 0800	0	120	120	0	240	238	135	0	0	373	0	0	0	0	0	47	0	169	0	216	829
0800 - 0815	0	133	104	0	237	243	105	0	0	348	0	0	0	0	0	45	0	174	0	219	804
0815 - 0830	0	96	129	1	226	233	112	0	0	345	0	0	0	0	0	29	0	157	0	186	757
Total	0	471	470	2	943	921	480	0	0	1401	0	0	0	0	0	154	0	695	0	849	3193
Approach %	0.00	49.95	49.84	0.21	-	65.74	34.26	0.00	0.00	-	0.00	0.00	0.00	0.00	-	18.14	0.00	81.86	0.00	-	
PHF	0.00	0.89	0.91	0.50	**0.98**	0.95	0.89	0.00	0.00	**0.94**	0.00	0.00	0.00	0.00	**0.00**	0.82	0.00	0.89	0.00	**0.93**	**0.96**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0815 - 0830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	111	117	1	229	202	127	0	0	329	0	0	0	0	0	30	0	194	0	224	782
0745 - 0800	0	116	120	0	236	236	131	0	0	367	0	0	0	0	0	43	0	162	0	205	808
0800 - 0815	0	128	102	0	230	240	105	0	0	345	0	0	0	0	0	44	0	167	0	211	786
0815 - 0830	0	91	126	1	218	228	108	0	0	336	0	0	0	0	0	26	0	150	0	176	730
Total	0	446	465	2	913	906	471	0	0	1377	0	0	0	0	0	143	0	673	0	816	3106
Approach %	0.00	48.85	50.93	0.22	-	65.80	34.20	0.00	0.00	-	0.00	0.00	0.00	0.00	-	17.52	0.00	82.48	0.00	-	
PHF	0.00	0.87	0.92	0.50	**0.97**	0.94	0.90	0.00	0.00	**0.94**	0.00	0.00	0.00	0.00	**0.00**	0.81	0.00	0.87	0.00	**0.91**	**0.96**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	6	0	0	6	5	1	0	0	6	0	0	0	0	0	3	0	1	0	4	16
0745 - 0800	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	4	0	6	0	10	15
0800 - 0815	0	4	1	0	5	3	0	0	0	3	0	0	0	0	0	1	0	4	0	5	13
0815 - 0830	0	4	3	0	7	4	4	0	0	8	0	0	0	0	0	2	0	6	0	8	23
Total	0	16	4	0	20	12	8	0	0	20	0	0	0	0	0	10	0	17	0	27	67
Approach %	0.00	80.00	20.00	0.00	-	60.00	40.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	37.04	0.00	62.96	0.00	-	
PHF	0.00	0.67	0.33	0.00	**0.71**	0.60	0.50	0.00	0.00	**0.63**	0.00	0.00	0.00	0.00	**0.00**	0.63	0.00	0.71	0.00	**0.68**	**0.73**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0730 - 0745	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
0745 - 0800	0	2	0	0	2	2	1	0	0	3	0	0	0	0	0	0	0	1	0	1	6
0800 - 0815	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5
0815 - 0830	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	1	0	1	0	2	4
Total	0	9	1	0	10	3	1	0	0	4	0	0	0	0	0	1	0	5	0	6	20
Approach %	0.00	90.00	10.00	0.00	-	75.00	25.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	16.67	0.00	83.33	0.00	-	
PHF	0.00	0.45	0.25	0.00	**0.50**	0.38	0.25	0.00	0.00	**0.33**	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.42	0.00	**0.50**	**0.83**

Peak Hour Turning Movement Count

Franklin, TN

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, August 30, 2022	
Period	1600 - 1800
Peak Hour	1645 - 1745

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	130	80	0	210	177	118	0	0	295	0	0	0	0	0	104	0	280	0	384	889
1700 - 1715	0	127	90	0	217	173	110	0	1	284	0	0	0	0	0	123	0	267	1	391	892
1715 - 1730	0	123	85	1	209	191	111	0	0	302	0	0	0	0	0	139	0	316	0	455	966
1730 - 1745	0	132	88	0	220	194	143	0	0	337	0	0	0	0	0	89	0	241	1	331	888
Total	0	512	343	1	856	735	482	0	1	1218	0	0	0	0	0	455	0	1104	2	1561	3635
Approach %	0.00	59.81	40.07	0.12	-	60.34	39.57	0.00	0.08	-	0.00	0.00	0.00	0.00	-	29.15	0.00	70.72	0.13	-	
PHF	0.00	0.97	0.95	0.25	**0.97**	0.95	0.84	0.00	0.25	**0.90**	0.00	0.00	0.00	0.00	**0.00**	0.82	0.00	0.87	0.50	**0.86**	**0.94**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1730 - 1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	127	77	0	204	173	113	0	0	286	0	0	0	0	0	101	0	279	0	380	870
1700 - 1715	0	125	90	0	215	171	109	0	1	281	0	0	0	0	0	121	0	266	1	388	884
1715 - 1730	0	122	83	1	206	189	110	0	0	299	0	0	0	0	0	135	0	313	0	448	953
1730 - 1745	0	132	87	0	219	192	138	0	0	330	0	0	0	0	0	89	0	240	1	330	879
Total	0	506	337	1	844	725	470	0	1	1196	0	0	0	0	0	446	0	1098	2	1546	3586
Approach %	0.00	59.95	39.93	0.12	-	60.62	39.30	0.00	0.08	-	0.00	0.00	0.00	0.00	-	28.85	0.00	71.02	0.13	-	
PHF	0.00	0.96	0.94	0.25	**0.96**	0.94	0.85	0.00	0.25	**0.91**	0.00	0.00	0.00	0.00	**0.00**	0.83	0.00	0.88	0.50	**0.86**	**0.94**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	2	3	0	5	4	5	0	0	9	0	0	0	0	0	3	0	1	0	4	18
1700 - 1715	0	1	0	0	1	2	1	0	0	3	0	0	0	0	0	1	0	1	0	2	6
1715 - 1730	0	1	2	0	3	2	1	0	0	3	0	0	0	0	0	3	0	3	0	6	12
1730 - 1745	0	0	1	0	1	2	2	0	0	4	0	0	0	0	0	0	0	1	0	1	6
Total	0	4	6	0	10	10	9	0	0	19	0	0	0	0	0	7	0	6	0	13	42
Approach %	0.00	40.00	60.00	0.00	-	52.63	47.37	0.00	0.00	-	0.00	0.00	0.00	0.00	-	53.85	0.00	46.15	0.00	-	
PHF	0.00	0.50	0.50	0.00	**0.50**	0.63	0.45	0.00	0.00	**0.53**	0.00	0.00	0.00	0.00	**0.00**	0.58	0.00	0.50	0.00	**0.54**	**0.58**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	TN-397 Mack Hatcher Mem Pkwy (South)					TN-397 Mack Hatcher Mem Pkwy (North)					Driveway					Cool Springs Blvd					
Time	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1645 - 1700	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1700 - 1715	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
1715 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
1730 - 1745	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Total	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	2	0	0	0	2	7
Approach %	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.50	0.00	0.00	**0.50**	0.00	0.25	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	**0.00**	0.50	0.00	0.00	0.00	**0.50**	**0.58**

APPENDIX C

Volume Development

Trip Generation - 101 Cool Springs Boulevard

ITE Code	Land Use	Setting/Location	Density		Daily	AM Peak Hour			PM Peak Hour		
						Total	Enter	Exit	Total	Enter	Exit
220	Multifamily Housing (Low-Rise)	General Urban/Suburban	178	d.u.	1,216	78	19	59	97	61	36
822	Strip Retail Plaza (<40ksf) (Proposed)	General Urban/Suburban	3,500	s.f.	378	14	8	6	37	19	18
GROSS TRIPS					**1,594**	**92**	**27**	**65**	**134**	**80**	**54**
Gross Trips - Before Reductions					1,594	92	27	65	134	80	54
Residential					1,216	78	19	59	97	61	36
Retail					378	14	8	6	37	19	18
Reduction - Internal Capture					-38	0	0	0	-4	-2	-2
Retail					-38				-4	-2	-2
NEW TRIPS					**1,556**	**92**	**27**	**65**	**130**	**78**	**52**

INTERSECTION VOLUME WORKSHEET

INTERSECTION 1

Mack Hatcher Memorial Parkway at Cool Springs Boulevard

AM PEAK HOUR

	Driveway Eastbound				Cool Springs Boulevard Westbound				Mack Hatcher Memorial Parkway Northbound				Mack Hatcher Memorial Parkway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: KH Collected Count 8/30/2022)																	
Existing 2022 AM Volumes		**0**	**0**	**0**		**154**	**0**	**695**	**2**	**0**	**471**	**470**		**921**	**480**	**0**	**3193**
Existing Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Conflicting Pedestrians		1		0		0		1		0		1		1		0	
Heavy Vehicles						11		22				5		15	9		
Heavy Vehicle %	2	2	2	2	2	7	2	3	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	9	0	42	0	0	29	29	0	56	29	0	194
RIRO Driveway Adjustment					4												
CSTS Model Trip Distribution IN (EB)												*30%*		*70%*			
CSTS Model Trip Distribution OUT (WB)						*30%*		*70%*									
CSTS Model Trips (w/o Zone 12)						65		151				92		214			522
151/201 CSB Trip Distribution IN												*25%*		*20%*			0.45
151/201 CSB Trip Distribution OUT						*25%*		*20%*									0.45
151/201 CSB Trips	0	0	0	0	0	34	0	27	0	0	0	44	0	35	0	0	140
Optima Trips						14		20				10		15			
No-Build 2025 AM Volumes	**0**	**0**	**0**	**0**	**4**	**276**	**0**	**935**	**2**	**0**	**500**	**645**	**0**	**1241**	**509**	**0**	**4112**
Project Traffic																	
Trip Distribution IN												15%		15%			
Trip Distribution OUT						15%		15%									
Project Trips	0	0	0	0	0	10	0	10	0	0	0	4	0	4	0	0	28
Build 2025 AM Volumes	**0**	**0**	**0**	**0**	**4**	**286**	**0**	**945**	**2**	**0**	**500**	**649**	**0**	**1245**	**509**	**0**	**4140**
% from Existing	0.0%	0.0%	0.0%	0.0%	0.0%	53.8%	0.0%	73.5%	100.0%	0.0%	94.2%	72.4%	0.0%	74.0%	94.3%	0.0%	77.1%
% from Background Growth	0.0%	0.0%	0.0%	0.0%	100.0%	42.7%	0.0%	25.4%	0.0%	0.0%	5.8%	27.0%	0.0%	25.7%	5.7%	0.0%	22.2%
% from Project Trips	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	0.0%	1.1%	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%	0.0%	0.0%	0.7%

PM PEAK HOUR

	Driveway Eastbound				Cool Springs Boulevard Westbound				Mack Hatcher Memorial Parkway Northbound				Mack Hatcher Memorial Parkway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2022 AM Volumes		**0**	**0**	**0**	**2**	**455**	**0**	**1104**	**1**	**0**	**512**	**343**	**1**	**735**	**482**	**0**	**3635**
Existing Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Conflicting Pedestrians																	
Heavy Vehicles						9		6			6	6		10	12		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	28	0	67	0	0	31	21	0	45	29	0	221
New Road Adjustment					42												
CSTS Model Trip Distribution IN (EB)												*30%*		*70%*			
CSTS Model Trip Distribution OUT (WB)						*30%*		*70%*									
CSTS Model Trips (w/o Zone 12)						138		323				97		226			784
151/201 CSB Trip Distribution IN												*25%*		*20%*			0.45
151/201 CSB Trip Distribution OUT						*25%*		*20%*									0.45
151/201 CSB Trips	0	0	0	0	0	55	0	44	0	0	0	40	0	32	0	0	171
Optima Trips						13		19				15		23			
No-Build 2025 PM Volumes	**0**	**0**	**0**	**0**	**44**	**689**	**0**	**1557**	**1**	**0**	**543**	**516**	**1**	**1061**	**511**	**0**	**4923**
Project Traffic																	
Trip Distribution IN												15%		15%			
Trip Distribution OUT						15%		15%									
Project Trips	0	0	0	0	0	8	0	8	0	0	0	12	0	12	0	0	40
Build 2025 PM Volumes	**0**	**0**	**0**	**0**	**44**	**697**	**0**	**1565**	**1**	**0**	**543**	**528**	**1**	**1073**	**511**	**0**	**4963**
% from Existing	0.0%	0.0%	0.0%	0.0%	4.5%	65.3%	0.0%	70.5%	100.0%	0.0%	94.3%	65.0%	100.0%	68.5%	94.3%	0.0%	73.2%
% from Background Growth	0.0%	0.0%	0.0%	0.0%	95.5%	33.6%	0.0%	28.9%	0.0%	0.0%	5.7%	32.8%	0.0%	30.4%	5.7%	0.0%	26.0%
% from Project Trips	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.5%	0.0%	0.0%	0.0%	2.3%	0.0%	1.1%	0.0%	0.0%	0.8%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 2

Cool Spring Boulevard at Coldwell Bankers Driveway/Aspen Grove Medical Driveway

AM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				Coldwell Bankers Driveway Northbound				Aspen Grove Medical Driveway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Commercial Driveway Volumes In/Out from 201 CSB Joint TIS, CSB through volumes balanced with Int 1)																	
Existing 2023 AM Volumes		**27**	**1358**	**6**		**15**	**845**	**38**		**1**	**0**	**5**		**4**	**0**	**3**	**2302**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1	1.04	1	1.04	1	1.04	1	1	1	1	1	1	1	1	1	
Growth Trips	0	0	54	0	0	0	34	0	0	0	0	0	0	0	0	0	88
RIRO Driveway Adjustment		-27	31				1			-1		1		-4		4	
CSTS Model Trips (w/o Zone 12)			306				216										522
151/201 CSB Trip Distribution IN			*45%*					*40%*								*35%*	1.2
151/201 CSB Trip Distribution OUT							*10%*										0.1
151/201 CSB Trips	0	0	78	0	0	0	13	70	0	0	0	0	0	0	0	61	222
Optima Trips			26				34										
No-Build 2025 AM Volumes	**0**	**0**	**1853**	**6**	**0**	**15**	**1143**	**108**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**68**	**3199**
Project Traffic																	
Trip Distribution IN			30%					70%									
Trip Distribution OUT																30%	
Project Trips	0	0	8	0	0	0	0	19	0	0	0	0	0	0	0	20	47
Build 2025 AM Volumes	**0**	**0**	**1861**	**6**	**0**	**15**	**1143**	**127**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**88**	**3246**
% from Existing	0.0%	0.0%	73.0%	100.0%	0.0%	100.0%	73.9%	29.9%	0.0%	0.0%	0.0%	83.3%	0.0%	0.0%	0.0%	3.4%	70.9%
% from Background Growth	0.0%	0.0%	26.6%	0.0%	0.0%	0.0%	26.1%	55.1%	0.0%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	73.9%	27.6%
% from Project Trips	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	15.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.7%	1.4%

PM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				Coldwell Bankers Driveway Northbound				Aspen Grove Medical Driveway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes		**2**	**1070**	**6**		**11**	**1532**	**7**		**9**	**0**	**12**		**42**	**0**	**18**	**2709**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1	1.04	1	1.04	1	1.04	1	1	1	1	1	1	1	1	1	
Growth Trips	0	0	43	0	0	0	61	0	0	0	0	0	0	0	0	0	104
New Road Adjustment		-2	44				9			-9		9		-42		42	
CSTS Model Trips (w/o Zone 12)			323				461										784
151/201 CSB Trip Distribution IN			*45%*					*40%*								*35%*	1.2
151/201 CSB Trip Distribution OUT							*10%*										0.1
151/201 CSB Trips	0	0	72	0	0	0	22	64	0	0	0	0	0	0	0	56	214
Optima Trips			39				32										
No-Build 2025 PM Volumes	**0**	**0**	**1591**	**6**	**0**	**11**	**2117**	**71**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**116**	**3933**
Project Traffic																	
Trip Distribution IN			30%					70%									
Trip Distribution OUT																30%	
Project Trips	0	0	23	0	0	0	0	55	0	0	0	0	0	0	0	16	94
Build 2025 PM Volumes	**0**	**0**	**1614**	**6**	**0**	**11**	**2117**	**126**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**132**	**4027**
% from Existing	0.0%	0.0%	66.3%	100.0%	0.0%	100.0%	72.4%	5.6%	0.0%	0.0%	0.0%	57.1%	0.0%	0.0%	0.0%	13.6%	67.3%
% from Background Growth	0.0%	0.0%	32.3%	0.0%	0.0%	0.0%	27.6%	50.8%	0.0%	0.0%	0.0%	42.9%	0.0%	0.0%	0.0%	74.2%	30.4%
% from Project Trips	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	43.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.1%	2.3%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 3

Cool Springs Boulevard at Windcross Court

AM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Windcross Court **Northbound**				Windcross Court Extension **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Existing 2020 Vistro Counts, Balanced through volumes with Int 2)																	
Existing 2023 AM Volumes			**1279**	**88**		**196**	**873**	**0**		**25**	**0**	**96**					**2557**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1	1	1	1	1	1	1	1	
Growth Trips	0	0	51	4	0	8	35	0	0	0	0	0	0	0	0	0	98
RIRO Driveway Adjustment	1	31															
CSTS Model Trips (w/o Zone 12)			306				216										522
151/201 CSB Trip Distribution IN		*45%*					*40%*	*15%*									1
151/201 CSB Trip Distribution OUT														*55%*		*10%*	0.65
151/201 CSB Trips	0	78	0	0	0	0	70	26	0	0	0	0	0	74	0	13	261
Optima Trips			26				34										
No-Build 2025 AM Volumes	**1**	**109**	**1662**	**92**	**0**	**204**	**1228**	**26**	**0**	**25**	**0**	**96**	**0**	**74**	**0**	**13**	**3530**
Project Traffic																	
Trip Distribution IN		30%					70%										
Trip Distribution OUT														70%			
Project Trips	0	8	0	0	0	0	19	0	0	0	0	0	0	46	0	0	73
Build 2025 AM Volumes	**1**	**117**	**1662**	**92**	**0**	**204**	**1247**	**26**	**0**	**25**	**0**	**96**	**0**	**120**	**0**	**13**	**3603**
% from Existing	0.0%	0.0%	77.0%	95.7%	0.0%	96.1%	70.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	71.0%
% from Background Growth	100.0%	93.2%	23.0%	4.3%	0.0%	3.9%	28.5%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.7%	0.0%	100.0%	27.0%
% from Project Trips	0.0%	6.8%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.3%	0.0%	0.0%	2.0%

PM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Windcross Court **Northbound**				Windcross Court Extension **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes			**1106**	**18**		**127**	**1488**			**62**		**268**					**3069**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1	1	1	1	1	1	1	1	
Growth Trips	0	0	44	1	0	5	60	0	0	0	0	0	0	0	0	0	110
New Road Adjustment	9	44															
CSTS Model Trips (w/o Zone 12)			323				461										784
151/201 CSB Trip Distribution IN		*45%*					*40%*	*15%*									1
151/201 CSB Trip Distribution OUT														*55%*		*10%*	0.65
151/201 CSB Trips	0	72	0	0	0	0	64	24	0	0	0	0	0	122	0	22	304
Optima Trips			39				32										
No-Build 2025 PM Volumes	**9**	**116**	**1512**	**19**	**0**	**132**	**2105**	**24**	**0**	**62**	**0**	**268**	**0**	**122**	**0**	**22**	**4391**
Project Traffic																	
Trip Distribution IN		30%					70%										
Trip Distribution OUT														70%			
Project Trips	0	23	0	0	0	0	55	0	0	0	0	0	0	36	0	0	114
Build 2025 PM Volumes	**9**	**139**	**1512**	**19**	**0**	**132**	**2160**	**24**	**0**	**62**	**0**	**268**	**0**	**158**	**0**	**22**	**4505**
% from Existing	0.0%	0.0%	73.1%	94.7%	0.0%	96.2%	68.9%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	68.1%
% from Background Growth	100.0%	83.5%	26.9%	5.3%	0.0%	3.8%	28.6%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	77.2%	0.0%	100.0%	29.3%
% from Project Trips	0.0%	16.5%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.8%	0.0%	0.0%	2.5%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 4

Cool Springs Boulevard at McEwen Drive

AM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				McEwen Drive Northbound				- Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Existing 2020 Vistro Counts, Balanced volumes with Int 3 with through/turn split %s from Magnetometer Data*)																	
Existing 2023 AM Volumes			**874**	**501**		**93**	**750**			**319**		**223**					**2760**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1	1	1	1	
Growth Trips	0	0	35	20	0	4	30	0	0	13	0	9	0	0	0	0	111
RIRO Driveway Adjustment																	
CSTS Model Trips (w/o Zone 12)			55	251		0	61			155		0					522
151/201 CSB Trip Distribution IN							*30%*			*25%*							0.55
151/201 CSB Trip Distribution OUT			*30%*	*25%*													0.55
151/201 CSB Trips	0	0	40	34	0	0	52	0	0	44	0	0	0	0	0	0	170
Optima Trips		26	-1	0		0	-1	43		0	34	0		58	45	35	
No-Build 2025 AM Volumes	**0**	**26**	**1003**	**806**	**0**	**97**	**892**	**43**	**0**	**531**	**34**	**232**	**0**	**58**	**45**	**35**	**3802**
Project Traffic																	
Trip Distribution IN							50%			20%							
Trip Distribution OUT			50%	20%													
Project Trips	0	0	33	13	0	0	14	0	0	5	0	0	0	0	0	0	65
Build 2025 AM Volumes	**0**	**26**	**1036**	**819**	**0**	**97**	**906**	**43**	**0**	**536**	**34**	**232**	**0**	**58**	**45**	**35**	**3867**
% from Existing	0.0%	0.0%	84.4%	61.2%	0.0%	95.9%	82.8%	0.0%	0.0%	59.5%	0.0%	96.1%	0.0%	0.0%	0.0%	0.0%	71.4%
% from Background Growth	0.0%	100.0%	12.5%	37.2%	0.0%	4.1%	15.7%	100.0%	0.0%	39.6%	100.0%	3.9%	0.0%	100.0%	100.0%	100.0%	26.9%
% from Project Trips	0.0%	0.0%	3.2%	1.6%	0.0%	0.0%	1.5%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%

PM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				McEwen Drive Northbound				- Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes			**971**	**403**		**260**	**1097**			**518**		**179**					**3428**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1	1	1	1	
Growth Trips	0	0	39	16	0	10	44	0	0	21	0	7	0	0	0	0	137
New Road Adjustment																	
CSTS Model Trips (w/o Zone 12)			55	268		0	61			400		0					784
151/201 CSB Trip Distribution IN							*30%*			*25%*							0.55
151/201 CSB Trip Distribution OUT			*30%*	*25%*													0.55
151/201 CSB Trips	0	0	66	55	0	0	48	0	0	40	0	0	0	0	0	0	209
Optima Trips		39	-7	-3		-2	-7	65		-3	51	-1		62	47	42	
No-Build 2025 PM Volumes	**0**	**39**	**1124**	**739**	**0**	**268**	**1243**	**65**	**0**	**976**	**51**	**185**	**0**	**62**	**47**	**42**	**4841**
Project Traffic																	
Trip Distribution IN							50%			20%							
Trip Distribution OUT			50%	20%													
Project Trips	0	0	26	10	0	0	39	0	0	16	0	0	0	0	0	0	91
Build 2025 PM Volumes	**0**	**39**	**1150**	**749**	**0**	**268**	**1282**	**65**	**0**	**992**	**51**	**185**	**0**	**62**	**47**	**42**	**4932**
% from Existing	0.0%	0.0%	84.4%	53.8%	0.0%	97.0%	85.6%	0.0%	0.0%	52.2%	0.0%	96.8%	0.0%	0.0%	0.0%	0.0%	69.5%
% from Background Growth	0.0%	100.0%	13.3%	44.9%	0.0%	3.0%	11.4%	100.0%	0.0%	46.2%	100.0%	3.2%	0.0%	100.0%	100.0%	100.0%	28.6%
% from Project Trips	0.0%	0.0%	2.3%	1.3%	0.0%	0.0%	3.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%

**Note: Existing EB traffic balanced from Int 3 was split 65%-EBT/35%-EBR. Existing WB traffic balanced from Int 3 was split 65%-WBT/35%-NBL*

INTERSECTION VOLUME WORKSHEET

INTERSECTION 1

Mack Hatcher Memorial Parkway at Cool Springs Boulevard

AM PEAK HOUR

	Driveway Eastbound				Cool Springs Boulevard Westbound				Mack Hatcher Memorial Parkway Northbound				Mack Hatcher Memorial Parkway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: KH Collected Count 8/30/2022)																	
Existing 2022 AM Volumes		**0**	**0**	**0**		**154**	**0**	**695**	**2**	**0**	**471**	**470**		**921**	**480**	**0**	**3193**
Existing Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Conflicting Pedestrians		1		0		0		1		0		1		1		0	
Heavy Vehicles						11		22				5		15	9		
Heavy Vehicle %	2	2	2	2	2	7	2	3	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	
Growth Trips	0	0	0	0	0	26	0	120	0	0	81	81	0	158	83	0	549
RIRO Driveway Adjustment					4												
CSTS Model Trip Distribution IN (EB)												*30%*		*70%*			
CSTS Model Trip Distribution OUT (WB)						*30%*		*70%*									
CSTS Model Trips (w/o Zone 12)						65		151				92		214			522
151/201 CSB Trip Distribution IN												*25%*		*20%*			0.45
151/201 CSB Trip Distribution OUT						*25%*		*20%*									0.45
151/201 CSB Trips	0	0	0	0	0	34	0	27	0	0	0	44	0	35	0	0	140
Optima Trips						14		20				10		15			
No-Build 2030 AM Volumes	**0**	**0**	**0**	**0**	**4**	**293**	**0**	**1013**	**2**	**0**	**552**	**697**	**0**	**1343**	**563**	**0**	**4467**
Project Traffic																	
Trip Distribution IN												15%		15%			
Trip Distribution OUT						15%		15%									
Project Trips	0	0	0	0	0	10	0	10	0	0	0	4	0	4	0	0	28
Build 2030 AM Volumes	**0**	**0**	**0**	**0**	**4**	**303**	**0**	**1023**	**2**	**0**	**552**	**701**	**0**	**1347**	**563**	**0**	**4495**
% from Existing	0.0%	0.0%	0.0%	0.0%	0.0%	50.8%	0.0%	67.9%	100.0%	0.0%	85.3%	67.0%	0.0%	68.4%	85.3%	0.0%	71.0%
% from Background Growth	0.0%	0.0%	0.0%	0.0%	100.0%	45.9%	0.0%	31.1%	0.0%	0.0%	14.7%	32.4%	0.0%	31.3%	14.7%	0.0%	28.3%
% from Project Trips	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%	0.0%	1.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%	0.0%	0.0%	0.6%

PM PEAK HOUR

	Driveway Eastbound				Cool Springs Boulevard Westbound				Mack Hatcher Memorial Parkway Northbound				Mack Hatcher Memorial Parkway Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2022 AM Volumes		**0**	**0**	**0**	**2**	**455**	**0**	**1104**	**1**	**0**	**512**	**343**	**1**	**735**	**482**	**0**	**3635**
Existing Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Conflicting Pedestrians																	
Heavy Vehicles						9		6			6	6		10	12		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	1.172	
Growth Trips	0	0	0	0	0	78	0	190	0	0	88	59	0	126	83	0	624
New Road Adjustment					42												
CSTS Model Trip Distribution IN (EB)												*30%*		*70%*			
CSTS Model Trip Distribution OUT (WB)						*30%*		*70%*									
CSTS Model Trips (w/o Zone 12)						138		323				97		226			784
151/201 CSB Trip Distribution IN												*25%*		*20%*			0.45
151/201 CSB Trip Distribution OUT						*25%*		*20%*									0.45
151/201 CSB Trips	0	0	0	0	0	55	0	44	0	0	0	40	0	32	0	0	171
Optima Trips						13		19				15		23			
No-Build 2030 PM Volumes	**0**	**0**	**0**	**0**	**44**	**739**	**0**	**1680**	**1**	**0**	**600**	**554**	**1**	**1142**	**565**	**0**	**5326**
Project Traffic																	
Trip Distribution IN												15%		15%			
Trip Distribution OUT						15%		15%									
Project Trips	0	0	0	0	0	8	0	8	0	0	0	12	0	12	0	0	40
Build 2030 PM Volumes	**0**	**0**	**0**	**0**	**44**	**747**	**0**	**1688**	**1**	**0**	**600**	**566**	**1**	**1154**	**565**	**0**	**5366**
% from Existing	0.0%	0.0%	0.0%	0.0%	4.5%	60.9%	0.0%	65.4%	100.0%	0.0%	85.3%	60.6%	100.0%	63.7%	85.3%	0.0%	67.7%
% from Background Growth	0.0%	0.0%	0.0%	0.0%	95.5%	38.0%	0.0%	34.1%	0.0%	0.0%	14.7%	37.3%	0.0%	35.3%	14.7%	0.0%	31.5%
% from Project Trips	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.5%	0.0%	0.0%	0.0%	2.1%	0.0%	1.0%	0.0%	0.0%	0.7%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 2

Cool Spring Boulevard at Coldwell Bankers Driveway/Aspen Grove Medical Driveway

AM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Coldwell Bankers Driveway **Northbound**				Aspen Grove Medical Driveway **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Commercial Driveway Volumes In/Out from 201 CSB Joint TIS, CSB through volumes balanced with Int 1)																	
Existing 2023 AM Volumes		**27**	**1358**	**6**		**15**	**845**	**38**		**1**	**0**	**5**		**4**	**0**	**3**	**2302**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1	1.149	1	1.149	1	1.149	1	1	1	1	1	1	1	1	1	
Growth Trips	0	0	202	0	0	0	126	0	0	0	0	0	0	0	0	0	328
RIRO Driveway Adjustment		-27	31				1			-1		1		-4		4	
CSTS Model Trips (w/o Zone 12)			306				216										522
151/201 CSB Trip Distribution IN			*45%*					*40%*								*35%*	1.2
151/201 CSB Trip Distribution OUT							*10%*										0.1
151/201 CSB Trips	0	0	78	0	0	0	13	70	0	0	0	0	0	0	0	61	222
Optima Trips			26				34										
No-Build 2030 AM Volumes	**0**	**0**	**2001**	**6**	**0**	**15**	**1235**	**108**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**68**	**3439**
Project Traffic																	
Trip Distribution IN			30%					70%									
Trip Distribution OUT																30%	
Project Trips	0	0	8	0	0	0	0	19	0	0	0	0	0	0	0	20	47
Build 2030 AM Volumes	**0**	**0**	**2009**	**6**	**0**	**15**	**1235**	**127**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**88**	**3486**
% from Existing	0.0%	0.0%	67.6%	100.0%	0.0%	100.0%	68.4%	29.9%	0.0%	0.0%	0.0%	83.3%	0.0%	0.0%	0.0%	3.4%	66.0%
% from Background Growth	0.0%	0.0%	32.0%	0.0%	0.0%	0.0%	31.6%	55.1%	0.0%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	73.9%	32.6%
% from Project Trips	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	15.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.7%	1.3%

PM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Coldwell Bankers Driveway **Northbound**				Aspen Grove Medical Driveway **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes		**2**	**1070**	**6**		**11**	**1532**	**7**		**9**	**0**	**12**		**42**	**0**	**18**	**2709**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1	1.149	1	1.149	1	1.149	1	1	1	1	1	1	1	1	1	
Growth Trips	0	0	159	0	0	0	228	0	0	0	0	0	0	0	0	0	387
New Road Adjustment		-2	44				9			-9		9		-42		42	
CSTS Model Trips (w/o Zone 12)			323				461										784
151/201 CSB Trip Distribution IN			*45%*					*40%*								*35%*	1.2
151/201 CSB Trip Distribution OUT							*10%*										0.1
151/201 CSB Trips	0	0	72	0	0	0	22	64	0	0	0	0	0	0	0	56	214
Optima Trips			39				32										
No-Build 2030 PM Volumes	**0**	**0**	**1707**	**6**	**0**	**11**	**2284**	**71**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**116**	**4216**
Project Traffic																	
Trip Distribution IN			30%					70%									
Trip Distribution OUT																30%	
Project Trips	0	0	23	0	0	0	0	55	0	0	0	0	0	0	0	16	94
Build 2030 PM Volumes	**0**	**0**	**1730**	**6**	**0**	**11**	**2284**	**126**	**0**	**0**	**0**	**21**	**0**	**0**	**0**	**132**	**4310**
% from Existing	0.0%	0.0%	61.8%	100.0%	0.0%	100.0%	67.1%	5.6%	0.0%	0.0%	0.0%	57.1%	0.0%	0.0%	0.0%	13.6%	62.9%
% from Background Growth	0.0%	0.0%	36.8%	0.0%	0.0%	0.0%	32.9%	50.8%	0.0%	0.0%	0.0%	42.9%	0.0%	0.0%	0.0%	74.2%	35.0%
% from Project Trips	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	43.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.1%	2.2%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 3

Cool Springs Boulevard at Windcross Court

AM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Windcross Court **Northbound**				Windcross Court Extension **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Existing 2020 Vistro Counts, Balanced through volumes with Int 2)																	
Existing 2023 AM Volumes			**1279**	**88**		**196**	**873**	**0**		**25**	**0**	**96**					**2557**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1	1	1	1	1	1	1	1	
Growth Trips	0	0	191	13	0	29	130	0	0	0	0	0	0	0	0	0	363
RIRO Driveway Adjustment	1	31															
CSTS Model Trips (w/o Zone 12)			306				216										522
151/201 CSB Trip Distribution IN		*45%*					*40%*	*15%*									1
151/201 CSB Trip Distribution OUT														*55%*		*10%*	0.65
151/201 CSB Trips	0	78	0	0	0	0	70	26	0	0	0	0	0	74	0	13	261
Optima Trips			26				34										
No-Build 2030 AM Volumes	**1**	**109**	**1802**	**101**	**0**	**225**	**1323**	**26**	**0**	**25**	**0**	**96**	**0**	**74**	**0**	**13**	**3795**
Project Traffic																	
Trip Distribution IN		30%					70%										
Trip Distribution OUT														70%			
Project Trips	0	8	0	0	0	0	19	0	0	0	0	0	0	46	0	0	73
Build 2030 AM Volumes	**1**	**117**	**1802**	**101**	**0**	**225**	**1342**	**26**	**0**	**25**	**0**	**96**	**0**	**120**	**0**	**13**	**3868**
% from Existing	0.0%	0.0%	71.0%	87.1%	0.0%	87.1%	65.1%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	66.1%
% from Background Growth	100.0%	93.2%	29.0%	12.9%	0.0%	12.9%	33.5%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.7%	0.0%	100.0%	32.0%
% from Project Trips	0.0%	6.8%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.3%	0.0%	0.0%	1.9%

PM PEAK HOUR

	Cool Springs Boulevard **Eastbound**				Cool Springs Boulevard **Westbound**				Windcross Court **Northbound**				Windcross Court Extension **Southbound**				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes			**1089**	**35**		**108**	**1488**			**62**		**268**					**3050**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1	1	1	1	1	1	1	1	
Growth Trips	0	0	162	5	0	16	222	0	0	0	0	0	0	0	0	0	405
New Road Adjustment	9	44															
CSTS Model Trips (w/o Zone 12)			323				461										784
151/201 CSB Trip Distribution IN		*45%*					*40%*	*15%*									1
151/201 CSB Trip Distribution OUT														*55%*		*10%*	0.65
151/201 CSB Trips	0	72	0	0	0	0	64	24	0	0	0	0	0	122	0	22	304
Optima Trips			39				32										
No-Build 2030 PM Volumes	**9**	**116**	**1613**	**40**	**0**	**124**	**2267**	**24**	**0**	**62**	**0**	**268**	**0**	**122**	**0**	**22**	**4667**
Project Traffic																	
Trip Distribution IN		30%					70%										
Trip Distribution OUT														70%			
Project Trips	0	23	0	0	0	0	55	0	0	0	0	0	0	36	0	0	114
Build 2030 PM Volumes	**9**	**139**	**1613**	**40**	**0**	**124**	**2322**	**24**	**0**	**62**	**0**	**268**	**0**	**158**	**0**	**22**	**4781**
% from Existing	0.0%	0.0%	67.5%	87.5%	0.0%	87.1%	64.1%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	63.8%
% from Background Growth	100.0%	83.5%	32.5%	12.5%	0.0%	12.9%	33.5%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	77.2%	0.0%	100.0%	33.8%
% from Project Trips	0.0%	16.5%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.8%	0.0%	0.0%	2.4%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 4

Cool Springs Boulevard at McEwen Drive

AM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				McEwen Drive Northbound				- Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic (Count Source: Existing 2020 Vistro Counts, Balanced volumes with Int 3 with through/turn split %s from Magnetometer Data*)																	
Existing 2023 AM Volumes			**874**	**501**		**93**	**750**			**319**		**223**					**2760**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1	1	1	1	
Growth Trips	0	0	130	75	0	14	112	0	0	48	0	33	0	0	0	0	412
RIRO Driveway Adjustment																	
CSTS Model Trips (w/o Zone 12)			55	251		0	61			155		0					522
151/201 CSB Trip Distribution IN							*30%*			*25%*							0.55
151/201 CSB Trip Distribution OUT			*30%*	*25%*													0.55
151/201 CSB Trips	0	0	40	34	0	0	52	0	0	44	0	0	0	0	0	0	170
Optima Trips		26	-1	0		0	-1	43		0	34	0		58	45	35	
No-Build 2030 AM Volumes	**0**	**26**	**1098**	**861**	**0**	**107**	**974**	**43**	**0**	**566**	**34**	**256**	**0**	**58**	**45**	**35**	**4103**
Project Traffic																	
Trip Distribution IN							50%			20%							
Trip Distribution OUT			50%	20%													
Project Trips	0	0	33	13	0	0	14	0	0	5	0	0	0	0	0	0	65
Build 2030 AM Volumes	**0**	**26**	**1131**	**874**	**0**	**107**	**988**	**43**	**0**	**571**	**34**	**256**	**0**	**58**	**45**	**35**	**4168**
% from Existing	0.0%	0.0%	77.3%	57.3%	0.0%	86.9%	75.9%	0.0%	0.0%	55.9%	0.0%	87.1%	0.0%	0.0%	0.0%	0.0%	66.2%
% from Background Growth	0.0%	100.0%	19.8%	41.2%	0.0%	13.1%	22.7%	100.0%	0.0%	43.3%	100.0%	12.9%	0.0%	100.0%	100.0%	100.0%	32.2%
% from Project Trips	0.0%	0.0%	2.9%	1.5%	0.0%	0.0%	1.4%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%

PM PEAK HOUR

	Cool Springs Boulevard Eastbound				Cool Springs Boulevard Westbound				McEwen Drive Northbound				- Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes			**954**	**403**		**260**	**1078**			**518**		**179**					**3392**
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians																	
Heavy Vehicles																	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	
Growth Factor	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1	1	1	1	
Growth Trips	0	0	142	60	0	39	161	0	0	77	0	27	0	0	0	0	506
New Road Adjustment																	
CSTS Model Trips (w/o Zone 12)			55	268		0	61			400		0					784
151/201 CSB Trip Distribution IN							*30%*			*25%*							0.55
151/201 CSB Trip Distribution OUT			*30%*	*25%*													0.55
151/201 CSB Trips	0	0	66	55	0	0	48	0	0	40	0	0	0	0	0	0	209
Optima Trips		39	-7	-3		-2	-7	65		-3	51	-1		62	47	42	
No-Build 2030 PM Volumes	**0**	**39**	**1210**	**783**	**0**	**297**	**1341**	**65**	**0**	**1032**	**51**	**205**	**0**	**62**	**47**	**42**	**5174**
Project Traffic																	
Trip Distribution IN							50%			20%							
Trip Distribution OUT			50%	20%													
Project Trips	0	0	26	10	0	0	39	0	0	16	0	0	0	0	0	0	91
Build 2030 PM Volumes	**0**	**39**	**1236**	**793**	**0**	**297**	**1380**	**65**	**0**	**1048**	**51**	**205**	**0**	**62**	**47**	**42**	**5265**
% from Existing	0.0%	0.0%	77.2%	50.8%	0.0%	87.5%	78.1%	0.0%	0.0%	49.4%	0.0%	87.3%	0.0%	0.0%	0.0%	0.0%	64.4%
% from Background Growth	0.0%	100.0%	20.7%	47.9%	0.0%	12.5%	19.1%	100.0%	0.0%	49.0%	100.0%	12.7%	0.0%	100.0%	100.0%	100.0%	33.8%
% from Project Trips	0.0%	0.0%	2.1%	1.3%	0.0%	0.0%	2.8%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%

**Note: Existing EB traffic balanced from Int 3 was split 65%-EBT/35%-EBR. Existing WB traffic balanced from Int 3 was split 65%-WBT/35%-NBL*

APPENDIX D

Synchro Reports

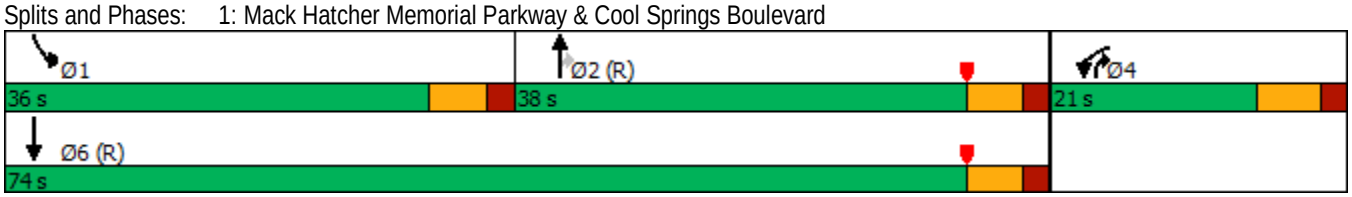
1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	154	695	473	470	921	480
Future Volume (vph)	154	695	473	470	921	480
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	8.0		18.0	8.0	8.0	10.0
Minimum Split (s)	14.5		24.0	14.5	14.0	16.0
Total Split (s)	21.0		38.0	21.0	36.0	74.0
Total Split (%)	22.1%		40.0%	22.1%	37.9%	77.9%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	12.7	95.0	33.8	46.0	30.0	69.8
Actuated g/C Ratio	0.13	1.00	0.36	0.48	0.32	0.73
v/c Ratio	0.37	0.47	0.39	0.64	0.88	0.19
Control Delay	30.4	2.4	24.5	18.1	42.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	2.4	24.5	18.1	42.2	4.3
LOS	C	A	C	B	D	A
Approach Delay	7.5		21.3			29.2
Approach LOS	A		C			C

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 95
Offset: 68 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 21.1 — Intersection LOS: C
Intersection Capacity Utilization 65.9% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	160	724	493	490	959	500
v/c Ratio	0.37	0.47	0.39	0.64	0.88	0.19
Control Delay	30.4	2.4	24.5	18.1	42.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	2.4	24.5	18.1	42.2	4.3
Queue Length 50th (ft)	41	19	117	173	280	43
Queue Length 95th (ft)	70	29	164	267	#393	61
Internal Link Dist (ft)	425		1396			1960
Turn Bay Length (ft)		230		1000	1000	
Base Capacity (vph)	499	1549	1258	797	1084	2599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.47	0.39	0.61	0.88	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	154	695	473	470	921	480
Future Volume (veh/h)	154	695	473	470	921	480
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	0	493	490	959	500
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	275		1467	785	1070	2791
Arrive On Green	0.08	0.00	0.41	0.41	0.31	0.79
Sat Flow, veh/h	3319	1572	3647	1583	3456	3647
Grp Volume(v), veh/h	160	0	493	490	959	500
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1583	1728	1777
Q Serve(g_s), s	4.4	0.0	9.0	21.5	25.2	3.3
Cycle Q Clear(g_c), s	4.4	0.0	9.0	21.5	25.2	3.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	275		1467	785	1070	2791
V/C Ratio(X)	0.58		0.34	0.62	0.90	0.18
Avail Cap(c_a), veh/h	507		1467	785	1091	2791
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	0.0	19.0	17.5	31.3	2.5
Incr Delay (d2), s/veh	4.1	0.0	0.6	3.7	11.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	3.5	9.3	11.4	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	46.1	0.0	19.6	21.2	43.0	2.7
LnGrp LOS	D		B	C	D	A
Approach Vol, veh/h	160		983			1459
Approach Delay, s/veh	46.1		20.4			29.2
Approach LOS	D		C			C

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	35.4	45.2		14.4		80.6
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	30.0	32.0		14.5		68.0
Max Q Clear Time (g_c+I1), s	27.2	23.5		6.4		5.3
Green Ext Time (p_c), s	2.2	6.5		0.6		7.0

Intersection Summary	
HCM 6th Ctrl Delay	26.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	1358	6	15	845	38	1	0	5	4	0	3
Future Vol, veh/h	27	1358	6	15	845	38	1	0	5	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	270	-	-	335	-	130	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	1429	6	16	889	40	1	0	5	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	929	0	0	1435	0	0	1965	2449	718	1692	2412	445
Stage 1	-	-	-	-	-	-	1488	1488	-	921	921	-
Stage 2	-	-	-	-	-	-	477	961	-	771	1491	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	732	-	-	469	-	-	38	31	371	60	32	561
Stage 1	-	-	-	-	-	-	130	186	-	291	347	-
Stage 2	-	-	-	-	-	-	538	333	-	359	185	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	732	-	-	469	-	-	36	29	371	56	30	561
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	114	-	162	111	-
Stage 1	-	-	-	-	-	-	125	179	-	280	335	-
Stage 2	-	-	-	-	-	-	517	322	-	340	178	-

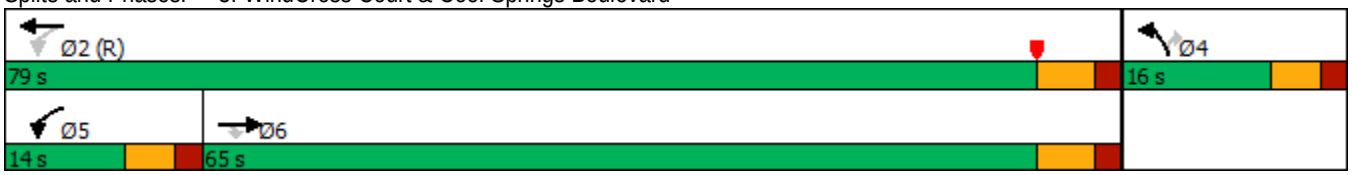
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	19.4	20.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	257	732	-	-	469	-	-	162	561
HCM Lane V/C Ratio	0.025	0.039	-	-	0.034	-	-	0.026	0.006
HCM Control Delay (s)	19.4	10.1	-	-	12.9	-	-	27.8	11.5
HCM Lane LOS	C	B	-	-	B	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-	-	0.1	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1279	88	196	873	25	96
Future Volume (vph)	1279	88	196	873	25	96
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases		6	2			4
Detector Phase	6	6	5	2	4	4
Switch Phase						
Minimum Initial (s)	20.0	20.0	6.0	20.0	8.0	8.0
Minimum Split (s)	26.0	26.0	11.5	26.0	13.5	13.5
Total Split (s)	65.0	65.0	14.0	79.0	16.0	16.0
Total Split (%)	68.4%	68.4%	14.7%	83.2%	16.8%	16.8%
Yellow Time (s)	4.0	4.0	3.5	4.0	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	C-Max	Max	Max
Act Effct Green (s)	59.1	59.1	73.5	73.0	10.5	10.5
Actuated g/C Ratio	0.62	0.62	0.77	0.77	0.11	0.11
v/c Ratio	0.63	0.09	0.68	0.35	0.14	0.39
Control Delay	16.7	3.0	28.1	2.5	40.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	3.0	28.1	2.5	40.1	12.8
LOS	B	A	C	A	D	B
Approach Delay	15.8			7.2	18.4	
Approach LOS	B			A	B	

Intersection Summary	
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 12.3	Intersection LOS: B
Intersection Capacity Utilization 67.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1390	96	213	949	27	104
v/c Ratio	0.63	0.09	0.68	0.35	0.14	0.39
Control Delay	16.7	3.0	28.1	2.5	40.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	3.0	28.1	2.5	40.1	12.8
Queue Length 50th (ft)	367	13	28	48	15	0
Queue Length 95th (ft)	m431	m16	m98	60	41	47
Internal Link Dist (ft)	434			1340	817	
Turn Bay Length (ft)		300	360			150
Base Capacity (vph)	2202	1021	313	2719	195	267
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.09	0.68	0.35	0.14	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1279	88	196	873	25	96
Future Volume (veh/h)	1279	88	196	873	25	96
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1390	96	213	949	27	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2301	1026	337	2731	197	175
Arrive On Green	0.65	0.65	0.13	1.00	0.11	0.11
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	1390	96	213	949	27	104
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	21.5	2.2	3.7	0.0	1.3	5.9
Cycle Q Clear(g_c), s	21.5	2.2	3.7	0.0	1.3	5.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2301	1026	337	2731	197	175
V/C Ratio(X)	0.60	0.09	0.63	0.35	0.14	0.59
Avail Cap(c_a), veh/h	2301	1026	385	2731	197	175
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.88	0.88	1.00	1.00
Uniform Delay (d), s/veh	9.7	6.3	9.8	0.0	38.2	40.2
Incr Delay (d2), s/veh	0.7	0.1	3.0	0.3	1.4	13.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	0.6	1.7	0.1	0.6	5.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.4	6.4	12.9	0.3	39.6	54.2
LnGrp LOS	B	A	B	A	D	D
Approach Vol, veh/h	1486			1162	131	
Approach Delay, s/veh	10.1			2.6	51.2	
Approach LOS	B			A	D	

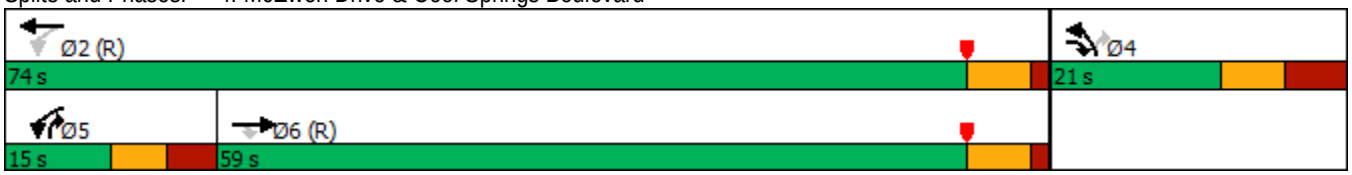
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		79.0		16.0	11.5	67.5
Change Period (Y+Rc), s		6.0		5.5	5.5	6.0
Max Green Setting (Gmax), s		73.0		10.5	8.5	59.0
Max Q Clear Time (g_c+I1), s		2.0		7.9	5.7	23.5
Green Ext Time (p_c), s		17.8		0.2	0.2	23.8

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	874	501	93	750	319	223
Future Volume (vph)	874	501	93	750	319	223
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov
Protected Phases	6	4	5	2	4	5
Permitted Phases		6	2			4
Detector Phase	6	4	5	2	4	5
Switch Phase						
Minimum Initial (s)	15.0	7.0	6.0	15.0	7.0	6.0
Minimum Split (s)	21.0	16.0	13.5	21.0	16.0	13.5
Total Split (s)	59.0	21.0	15.0	74.0	21.0	15.0
Total Split (%)	62.1%	22.1%	15.8%	77.9%	22.1%	15.8%
Yellow Time (s)	4.5	4.5	4.0	4.5	4.5	4.0
All-Red Time (s)	1.5	4.5	3.5	1.5	4.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	9.0	7.5	6.0	9.0	7.5
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max	None	None	C-Max	None	None
Act Effct Green (s)	54.3	72.0	66.8	68.3	11.7	27.2
Actuated g/C Ratio	0.57	0.76	0.70	0.72	0.12	0.29
v/c Ratio	0.47	0.41	0.27	0.32	0.82	0.45
Control Delay	5.7	0.7	6.3	5.3	57.9	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	0.7	6.3	5.3	57.9	17.0
LOS	A	A	A	A	E	B
Approach Delay	3.9			5.4	41.1	
Approach LOS	A			A	D	

Intersection Summary	
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 11.7	Intersection LOS: B
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	950	545	101	815	347	242
v/c Ratio	0.47	0.41	0.27	0.32	0.82	0.45
Control Delay	5.7	0.7	6.3	5.3	57.9	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	0.7	6.3	5.3	57.9	17.0
Queue Length 50th (ft)	39	1	17	81	106	59
Queue Length 95th (ft)	103	0	32	106	#172	127
Internal Link Dist (ft)	1340			514	620	
Turn Bay Length (ft)		260	260			300
Base Capacity (vph)	2024	1335	393	2546	433	550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.41	0.26	0.32	0.80	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	874	501	93	750	319	223
Future Volume (veh/h)	874	501	93	750	319	223
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	950	545	101	815	347	242
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2054	1117	330	2544	437	293
Arrive On Green	0.58	0.58	0.06	0.72	0.13	0.13
Sat Flow, veh/h	3647	1585	1781	3647	3456	1585
Grp Volume(v), veh/h	950	545	101	815	347	242
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1728	1585
Q Serve(g_s), s	14.6	14.7	2.0	8.0	9.3	12.0
Cycle Q Clear(g_c), s	14.6	14.7	2.0	8.0	9.3	12.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2054	1117	330	2544	437	293
V/C Ratio(X)	0.46	0.49	0.31	0.32	0.79	0.82
Avail Cap(c_a), veh/h	2054	1117	366	2544	437	293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	6.3	7.9	5.0	40.3	37.2
Incr Delay (d2), s/veh	0.6	1.1	0.2	0.3	9.1	16.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	6.8	0.6	2.3	4.4	12.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.1	7.5	8.1	5.3	49.4	53.5
LnGrp LOS	B	A	A	A	D	D
Approach Vol, veh/h	1495			916	589	
Approach Delay, s/veh	10.4			5.6	51.1	
Approach LOS	B			A	D	

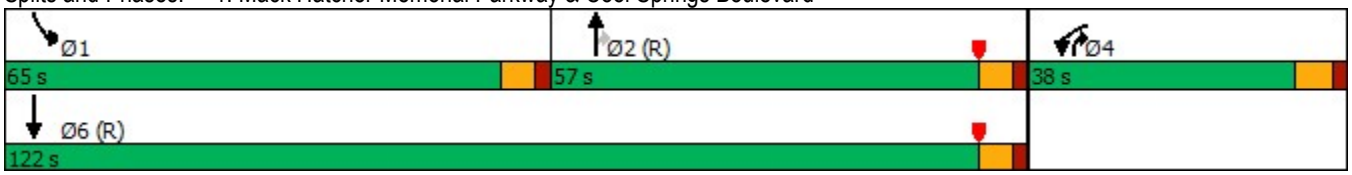
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		74.0		21.0	13.1	60.9
Change Period (Y+Rc), s		6.0		9.0	7.5	6.0
Max Green Setting (Gmax), s		68.0		12.0	7.5	53.0
Max Q Clear Time (g_c+I1), s		10.0		14.0	4.0	16.7
Green Ext Time (p_c), s		20.5		0.0	0.0	27.8

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	457	1104	513	343	736	482
Future Volume (vph)	457	1104	513	343	736	482
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	8.0		18.0	8.0	8.0	10.0
Minimum Split (s)	14.5		24.0	14.5	14.0	16.0
Total Split (s)	38.0		57.0	38.0	65.0	122.0
Total Split (%)	23.8%		35.6%	23.8%	40.6%	76.3%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	29.5	160.0	62.4	97.9	49.6	118.0
Actuated g/C Ratio	0.18	1.00	0.39	0.61	0.31	0.74
v/c Ratio	0.77	0.74	0.40	0.37	0.74	0.20
Control Delay	64.6	8.1	37.9	14.7	53.4	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	8.1	37.9	14.7	53.4	6.8
LOS	E	A	D	B	D	A
Approach Delay	24.7		28.6			34.9
Approach LOS	C		C			C

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 116 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 29.0	Intersection LOS: C
Intersection Capacity Utilization 64.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	486	1174	546	365	783	513
v/c Ratio	0.77	0.74	0.40	0.37	0.74	0.20
Control Delay	64.6	8.1	37.9	14.7	53.4	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	8.1	37.9	14.7	53.4	6.8
Queue Length 50th (ft)	259	828	221	150	378	83
Queue Length 95th (ft)	323	1025	301	251	418	104
Internal Link Dist (ft)	425		1396			1960
Turn Bay Length (ft)		230		1000	1000	
Base Capacity (vph)	675	1583	1379	1012	1265	2609
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.74	0.40	0.36	0.62	0.20

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	457	1104	513	343	736	482
Future Volume (veh/h)	457	1104	513	343	736	482
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	486	0	546	365	783	513
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	563		1535	943	1001	2697
Arrive On Green	0.16	0.00	0.43	0.43	0.29	0.76
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	486	0	546	365	783	513
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	21.9	0.0	16.5	19.4	33.3	6.5
Cycle Q Clear(g_c), s	21.9	0.0	16.5	19.4	33.3	6.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	563		1535	943	1001	2697
V/C Ratio(X)	0.86		0.36	0.39	0.78	0.19
Avail Cap(c_a), veh/h	680		1535	943	1274	2697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.2	0.0	30.5	17.1	52.2	5.4
Incr Delay (d2), s/veh	11.7	0.0	0.6	1.2	6.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	7.1	10.6	15.0	2.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	76.9	0.0	31.2	18.3	58.3	5.6
LnGrp LOS	E		C	B	E	A
Approach Vol, veh/h	486		911			1296
Approach Delay, s/veh	76.9		26.0			37.4
Approach LOS	E		C			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	52.3	75.1		32.6		127.4
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	59.0	51.0		31.5		116.0
Max Q Clear Time (g_c+I1), s	35.3	21.4		23.9		8.5
Green Ext Time (p_c), s	11.0	16.1		2.2		7.3

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1070	6	11	1532	7	9	0	12	42	0	18
Future Vol, veh/h	2	1070	6	11	1532	7	9	0	12	42	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	270	-	-	335	-	130	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1126	6	12	1613	7	9	0	13	44	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1620	0	0	1132	0	0	1964	2777	566	2204	2773	807
Stage 1	-	-	-	-	-	-	1133	1133	-	1637	1637	-
Stage 2	-	-	-	-	-	-	831	1644	-	567	1136	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	398	-	-	613	-	-	38	19	467	~ 25	19	324
Stage 1	-	-	-	-	-	-	216	276	-	105	157	-
Stage 2	-	-	-	-	-	-	330	156	-	476	275	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	398	-	-	613	-	-	35	19	467	~ 24	19	324
Mov Cap-2 Maneuver	-	-	-	-	-	-	130	97	-	83	97	-
Stage 1	-	-	-	-	-	-	215	275	-	104	154	-
Stage 2	-	-	-	-	-	-	305	153	-	461	274	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	23.1	67.8
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	221	398	-	-	613	-	-	83	324
HCM Lane V/C Ratio	0.1	0.005	-	-	0.019	-	-	0.533	0.058
HCM Control Delay (s)	23.1	14.1	-	-	11	-	-	89.7	16.8
HCM Lane LOS	C	B	-	-	B	-	-	F	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	2.3	0.2

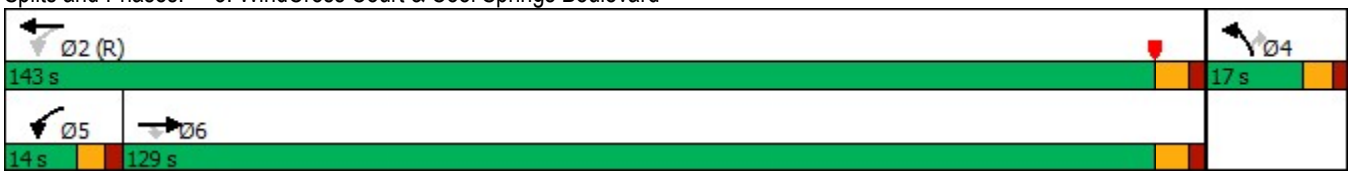
Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1106	18	127	1488	62	268
Future Volume (vph)	1106	18	127	1488	62	268
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases		6	2			4
Detector Phase	6	6	5	2	4	4
Switch Phase						
Minimum Initial (s)	20.0	20.0	6.0	20.0	8.0	8.0
Minimum Split (s)	26.0	26.0	11.5	26.0	13.5	13.5
Total Split (s)	129.0	129.0	14.0	143.0	17.0	17.0
Total Split (%)	80.6%	80.6%	8.8%	89.4%	10.6%	10.6%
Yellow Time (s)	4.0	4.0	3.5	4.0	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	C-Max	Max	Max
Act Effct Green (s)	123.4	123.4	137.5	137.0	11.5	11.5
Actuated g/C Ratio	0.77	0.77	0.86	0.86	0.07	0.07
v/c Ratio	0.44	0.02	0.35	0.53	0.53	0.97
Control Delay	12.5	1.2	3.2	2.2	87.2	68.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	1.2	3.2	2.2	87.2	68.2
LOS	B	A	A	A	F	E
Approach Delay	12.4			2.3	71.7	
Approach LOS	B			A	E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 13.4	Intersection LOS: B
Intersection Capacity Utilization 58.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1202	20	138	1617	67	291
v/c Ratio	0.44	0.02	0.35	0.53	0.53	0.97
Control Delay	12.5	1.2	3.2	2.2	87.2	68.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	1.2	3.2	2.2	87.2	68.2
Queue Length 50th (ft)	485	2	11	98	69	100
Queue Length 95th (ft)	516	m4	m16	m107	125	#300
Internal Link Dist (ft)	434			1340	817	
Turn Bay Length (ft)		300	360			150
Base Capacity (vph)	2728	1225	393	3030	127	299
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.02	0.35	0.53	0.53	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1106	18	127	1488	62	268
Future Volume (veh/h)	1106	18	127	1488	62	268
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1202	20	138	1617	67	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2788	1243	425	3043	128	114
Arrive On Green	0.78	0.78	0.07	1.00	0.07	0.07
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	1202	20	138	1617	67	89
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	17.6	0.4	2.3	0.0	5.8	8.8
Cycle Q Clear(g_c), s	17.6	0.4	2.3	0.0	5.8	8.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2788	1243	425	3043	128	114
V/C Ratio(X)	0.43	0.02	0.32	0.53	0.52	0.78
Avail Cap(c_a), veh/h	2788	1243	453	3043	128	114
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.74	0.74	1.00	1.00
Uniform Delay (d), s/veh	5.6	3.8	3.9	0.0	71.6	73.0
Incr Delay (d2), s/veh	0.2	0.0	0.5	0.5	14.5	40.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.1	0.7	0.2	3.2	8.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.8	3.8	4.4	0.5	86.1	113.1
LnGrp LOS	A	A	A	A	F	F
Approach Vol, veh/h	1222			1755	156	
Approach Delay, s/veh	5.8			0.8	101.5	
Approach LOS	A			A	F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		143.0		17.0	11.5	131.5
Change Period (Y+Rc), s		6.0		5.5	5.5	6.0
Max Green Setting (Gmax), s		137.0		11.5	8.5	123.0
Max Q Clear Time (g_c+I1), s		2.0		10.8	4.3	19.6
Green Ext Time (p_c), s		62.8		0.1	0.2	31.7

Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A

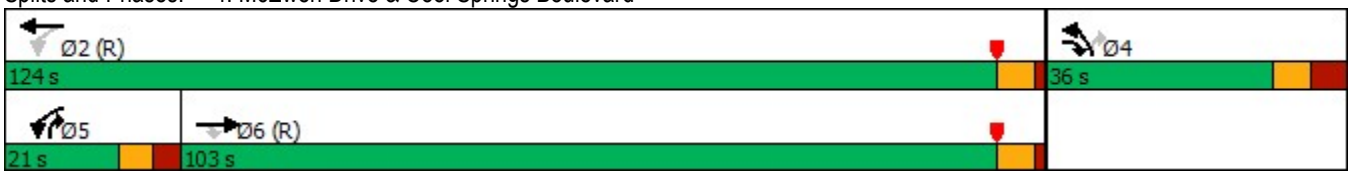
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	971	403	260	1097	518	179
Future Volume (vph)	971	403	260	1097	518	179
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov
Protected Phases	6	4	5	2	4	5
Permitted Phases		6	2			4
Detector Phase	6	4	5	2	4	5
Switch Phase						
Minimum Initial (s)	15.0	7.0	6.0	15.0	7.0	6.0
Minimum Split (s)	21.0	16.0	13.5	21.0	16.0	13.5
Total Split (s)	103.0	36.0	21.0	124.0	36.0	21.0
Total Split (%)	64.4%	22.5%	13.1%	77.5%	22.5%	13.1%
Yellow Time (s)	4.5	4.5	4.0	4.5	4.5	4.0
All-Red Time (s)	1.5	4.5	3.5	1.5	4.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	9.0	7.5	6.0	9.0	7.5
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max	None	None	C-Max	None	None
Act Effct Green (s)	98.4	131.4	116.5	118.0	27.0	48.1
Actuated g/C Ratio	0.62	0.82	0.73	0.74	0.17	0.30
v/c Ratio	0.49	0.33	0.76	0.46	0.97	0.35
Control Delay	7.0	1.1	21.5	9.0	96.3	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	1.1	21.5	9.0	96.3	20.3
LOS	A	A	C	A	F	C
Approach Delay	5.2			11.4	76.8	
Approach LOS	A			B	E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1055	438	283	1192	563	195
v/c Ratio	0.49	0.33	0.76	0.46	0.97	0.35
Control Delay	7.0	1.1	21.5	9.0	96.3	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	1.1	21.5	9.0	96.3	20.3
Queue Length 50th (ft)	108	10	88	236	306	67
Queue Length 95th (ft)	m121	m17	129	275	#428	140
Internal Link Dist (ft)	1340			514	620	
Turn Bay Length (ft)		260	260			300
Base Capacity (vph)	2175	1335	385	2610	579	565
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.33	0.74	0.46	0.97	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	971	403	260	1097	518	179
Future Volume (veh/h)	971	403	260	1097	518	179
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1055	438	283	1192	563	195
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2208	1252	415	2621	583	377
Arrive On Green	0.62	0.62	0.07	0.74	0.17	0.17
Sat Flow, veh/h	3647	1585	1781	3647	3456	1585
Grp Volume(v), veh/h	1055	438	283	1192	563	195
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1728	1585
Q Serve(g_s), s	25.6	12.8	9.0	21.2	25.9	17.1
Cycle Q Clear(g_c), s	25.6	12.8	9.0	21.2	25.9	17.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2208	1252	415	2621	583	377
V/C Ratio(X)	0.48	0.35	0.68	0.45	0.97	0.52
Avail Cap(c_a), veh/h	2208	1252	442	2621	583	377
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	4.9	13.4	8.3	66.0	53.0
Incr Delay (d2), s/veh	0.6	0.6	3.1	0.6	28.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	8.7	3.8	8.1	13.8	15.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.9	5.5	16.5	8.9	94.5	53.5
LnGrp LOS	B	A	B	A	F	D
Approach Vol, veh/h	1493			1475	758	
Approach Delay, s/veh	13.6			10.3	84.0	
Approach LOS	B			B	F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		124.0		36.0	18.6	105.4
Change Period (Y+Rc), s		6.0		9.0	7.5	6.0
Max Green Setting (Gmax), s		118.0		27.0	13.5	97.0
Max Q Clear Time (g_c+I1), s		23.2		27.9	11.0	27.6
Green Ext Time (p_c), s		46.5		0.0	0.1	46.2

Intersection Summary	
HCM 6th Ctrl Delay	26.6
HCM 6th LOS	C

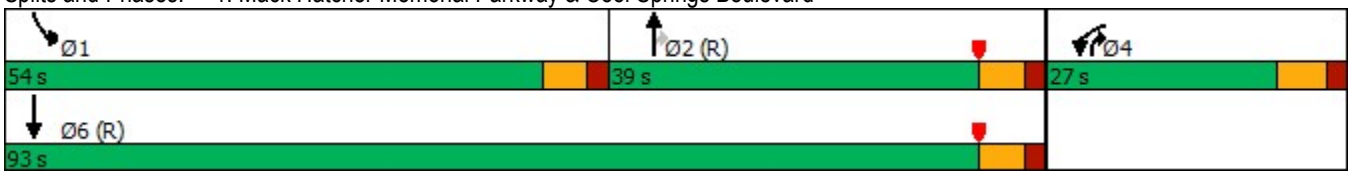
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	280	935	502	645	1241	509
Future Volume (vph)	280	935	502	645	1241	509
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	20.5	120.0	33.0	53.0	48.0	87.0
Actuated g/C Ratio	0.17	1.00	0.28	0.44	0.40	0.72
v/c Ratio	0.52	0.63	0.54	0.96	0.94	0.21
Control Delay	34.0	10.8	39.5	54.1	48.9	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	10.8	39.5	54.1	48.9	5.6
LOS	C	B	D	D	D	A
Approach Delay	16.2		47.7			36.3
Approach LOS	B		D			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 33.5	Intersection LOS: C
Intersection Capacity Utilization 85.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Maximum Green (s)	20.5		33.0	20.5	48.0	87.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
10th %ile Term Code	Max		Coord	Max	Max	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	280	935	502	645	1241	509
Future Volume (veh/h)	280	935	502	645	1241	509
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	292	0	523	672	1293	530
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	498		1060	710	1374	2650
Arrive On Green	0.15	0.00	0.30	0.30	0.40	0.75
Sat Flow, veh/h	3319	1572	3647	1582	3456	3647
Grp Volume(v), veh/h	292	0	523	672	1293	530
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1582	1728	1777
Q Serve(g_s), s	9.8	0.0	14.5	35.8	43.2	5.3
Cycle Q Clear(g_c), s	9.8	0.0	14.5	35.8	43.2	5.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	498		1060	710	1374	2650
V/C Ratio(X)	0.59		0.49	0.95	0.94	0.20
Avail Cap(c_a), veh/h	567		1060	710	1382	2650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	34.7	28.1	34.8	4.6
Incr Delay (d2), s/veh	2.4	0.0	1.6	23.1	13.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	6.3	24.5	19.7	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.0	0.0	36.3	51.2	48.5	4.7
LnGrp LOS	D		D	D	D	A
Approach Vol, veh/h	292		1195			1823
Approach Delay, s/veh	50.0		44.7			35.8
Approach LOS	D		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	53.7	41.8		24.5		95.5
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	48.0	33.0		20.5		87.0
Max Q Clear Time (g_c+I1), s	45.2	37.8		11.8		7.3
Green Ext Time (p_c), s	2.5	0.0		1.3		7.6

Intersection Summary	
HCM 6th Ctrl Delay	40.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1853	6	15	1143	108	0	0	6	0	0	68
Future Vol, veh/h	0	1853	6	15	1143	108	0	0	6	0	0	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1951	6	16	1203	114	0	0	6	0	0	72

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1957	0	0	-	-	979	-	-	602
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	294	-	-	0	0	249	0	0	443
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	294	-	-	-	-	249	-	-	443
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

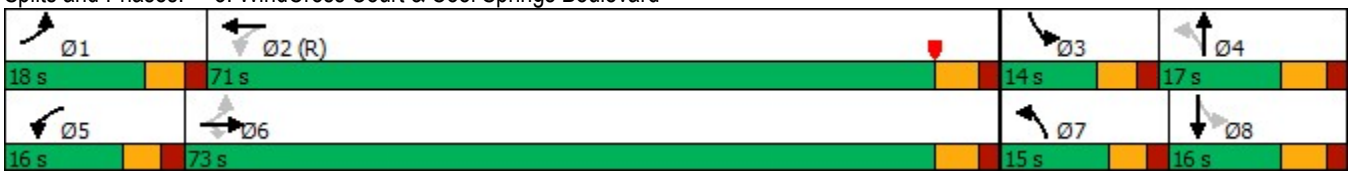
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	19.8	14.7
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	249	-	-	294	-	-	443
HCM Lane V/C Ratio	0.025	-	-	0.054	-	-	0.162
HCM Control Delay (s)	19.8	-	-	17.9	-	-	14.7
HCM Lane LOS	C	-	-	C	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	110	1662	92	204	1228	25	0	74	0
Future Volume (vph)	110	1662	92	204	1228	25	0	74	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	6	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	78.4	68.7	68.7	83.5	71.7	19.1	10.4	16.3	12.8
Actuated g/C Ratio	0.65	0.57	0.57	0.70	0.60	0.16	0.09	0.14	0.11
v/c Ratio	0.45	0.89	0.10	0.91	0.65	0.11	0.33	0.38	0.04
Control Delay	8.9	32.3	3.4	70.1	18.7	39.4	2.7	48.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	32.3	3.4	70.1	18.7	39.4	2.7	48.6	0.2
LOS	A	C	A	E	B	D	A	D	A
Approach Delay		29.5			25.9		10.3		41.4
Approach LOS		C			C		B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 27.6	Intersection LOS: C
Intersection Capacity Utilization 82.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Maximum Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	12.0	67.0	67.0	10.5	65.5	9.5	11.0	8.5	10.0
90th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
70th %ile Green (s)	9.9	67.0	67.0	10.5	67.6	9.5	11.0	8.5	10.0
70th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
50th %ile Green (s)	9.0	67.0	67.0	11.5	69.5	24.5	10.0	8.5	0.0
50th %ile Term Code	Gap	Coord	Coord	Max	Coord	Hold	Min	Max	Skip
30th %ile Green (s)	8.3	67.0	67.0	11.5	70.2	0.0	10.0	8.5	24.0
30th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold
10th %ile Green (s)	7.0	75.4	75.4	17.1	85.5	0.0	10.0	0.0	10.0
10th %ile Term Code	Gap	Coord	Coord	Gap	Coord	Skip	Min	Skip	Hold

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1662	92	204	1228	26	25	0	96	74	0	13
Future Volume (veh/h)	110	1662	92	204	1228	26	25	0	96	74	0	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	1807	100	222	1335	28	27	0	104	80	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	2048	914	248	2187	46	246	0	131	194	0	167
Arrive On Green	0.05	0.58	0.58	0.09	0.61	0.61	0.04	0.00	0.08	0.06	0.00	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3559	75	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	120	1807	100	222	666	697	27	0	104	80	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1857	1781	0	1585	1781	0	1585
Q Serve(g_s), s	3.2	52.6	3.4	8.5	27.7	27.8	1.6	0.0	7.7	4.8	0.0	1.0
Cycle Q Clear(g_c), s	3.2	52.6	3.4	8.5	27.7	27.8	1.6	0.0	7.7	4.8	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	300	2048	914	248	1092	1141	246	0	131	194	0	167
V/C Ratio(X)	0.40	0.88	0.11	0.90	0.61	0.61	0.11	0.00	0.79	0.41	0.00	0.08
Avail Cap(c_a), veh/h	398	2048	914	248	1092	1141	317	0	145	210	0	167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	21.9	11.5	34.5	14.3	14.3	46.9	0.0	54.0	46.2	0.0	48.5
Incr Delay (d2), s/veh	1.2	5.2	0.1	25.9	1.9	1.9	0.4	0.0	28.2	3.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	21.3	1.2	8.2	10.7	11.2	0.8	0.0	4.1	2.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.5	27.1	11.6	60.4	16.2	16.1	47.4	0.0	82.2	49.2	0.0	48.9
LnGrp LOS	B	C	B	E	B	B	D	A	F	D	A	D
Approach Vol, veh/h		2027			1585			131			94	
Approach Delay, s/veh		25.6			22.4			75.0			49.2	
Approach LOS		C			C			E			D	

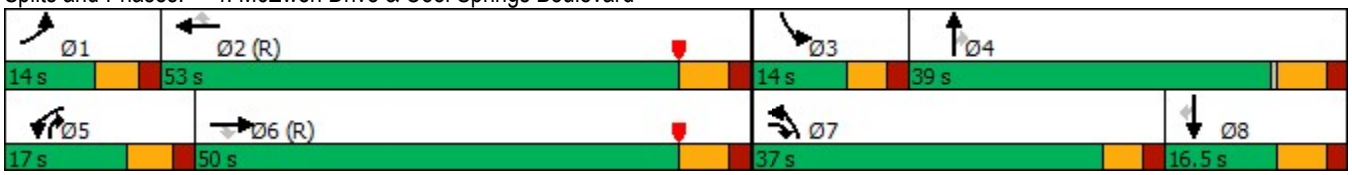
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	79.7	12.9	15.9	16.0	75.2	10.2	18.6
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	65.0	8.5	11.0	10.5	67.0	9.5	10.0
Max Q Clear Time (g_c+I1), s	5.2	29.8	6.8	9.7	10.5	54.6	3.6	3.0
Green Ext Time (p_c), s	0.2	21.7	0.0	0.1	0.0	11.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	26.5
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1003	806	97	892	43	531	34	232	58	45	35
Future Volume (vph)	26	1003	806	97	892	43	531	34	232	58	45	35
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	2	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	6.5	5.5	6.5	6.0	5.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	7.6	48.2	85.2	10.6	56.4	56.4	30.5	26.9	40.7	16.3	10.0	10.0
Actuated g/C Ratio	0.06	0.40	0.71	0.09	0.47	0.47	0.25	0.22	0.34	0.14	0.08	0.08
v/c Ratio	0.25	0.77	0.71	0.68	0.59	0.06	0.66	0.09	0.43	0.26	0.32	0.13
Control Delay	59.4	37.5	9.6	75.1	28.1	0.1	44.5	35.2	21.8	53.5	58.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	37.5	9.6	75.1	28.1	0.1	44.5	35.2	21.8	53.5	58.0	0.9
LOS	E	D	A	E	C	A	D	D	C	D	E	A
Approach Delay		25.5			31.3			37.5			41.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 120.5	
Actuated Cycle Length: 120.5	
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 30.2	Intersection LOS: C
Intersection Capacity Utilization 78.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Maximum Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	32.5	11.0	8.5	10.0	10.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
30th %ile Green (s)	0.0	43.5	31.5	11.0	60.5	60.5	31.5	0.0	11.0	48.0	10.0	10.0
30th %ile Term Code	Skip	Coord	Max	Max	Coord	Coord	Max	Skip	Max	Hold	Max	Max
10th %ile Green (s)	0.0	67.0	26.6	8.9	81.9	81.9	26.6	25.6	8.9	0.0	0.0	0.0
10th %ile Term Code	Skip	Coord	Gap	Gap	Coord	Coord	Gap	Hold	Gap	Skip	Skip	Skip

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 120.5
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1003	806	97	892	43	531	34	232	58	45	35
Future Volume (veh/h)	26	1003	806	97	892	43	531	34	232	58	45	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1090	876	105	970	47	577	37	252	63	49	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1549	1014	130	1701	759	703	427	478	104	156	132
Arrive On Green	0.03	0.44	0.44	0.07	0.48	0.48	0.20	0.23	0.23	0.06	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	28	1090	876	105	970	47	577	37	252	63	49	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	29.9	52.3	7.0	23.5	1.9	19.2	1.9	15.8	4.1	3.0	2.7
Cycle Q Clear(g_c), s	1.9	29.9	52.3	7.0	23.5	1.9	19.2	1.9	15.8	4.1	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1549	1014	130	1701	759	703	427	478	104	156	132
V/C Ratio(X)	0.52	0.70	0.86	0.81	0.57	0.06	0.82	0.09	0.53	0.60	0.31	0.29
Avail Cap(c_a), veh/h	119	1549	1014	163	1701	759	907	507	545	126	156	132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.37	0.37	0.37	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	27.5	17.4	54.8	22.4	16.8	45.7	36.4	34.8	55.1	51.8	51.7
Incr Delay (d2), s/veh	4.0	1.0	3.9	23.2	1.4	0.2	6.6	0.2	1.9	11.5	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	12.4	19.0	3.9	9.7	0.7	8.8	0.9	6.4	2.2	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	28.5	21.4	78.0	23.8	17.0	52.3	36.6	36.8	66.6	54.2	54.2
LnGrp LOS	E	C	C	E	C	B	D	D	D	E	D	D
Approach Vol, veh/h		1994			1122			866			150	
Approach Delay, s/veh		25.8			28.6			47.1			59.4	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	63.9	12.5	33.9	14.8	58.8	29.9	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	46.5	8.5	32.5	11.0	43.5	31.5	10.0
Max Q Clear Time (g_c+I1), s	3.9	25.5	6.1	17.8	9.0	54.3	21.2	5.0
Green Ext Time (p_c), s	0.0	11.5	0.0	1.9	0.1	0.0	3.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C

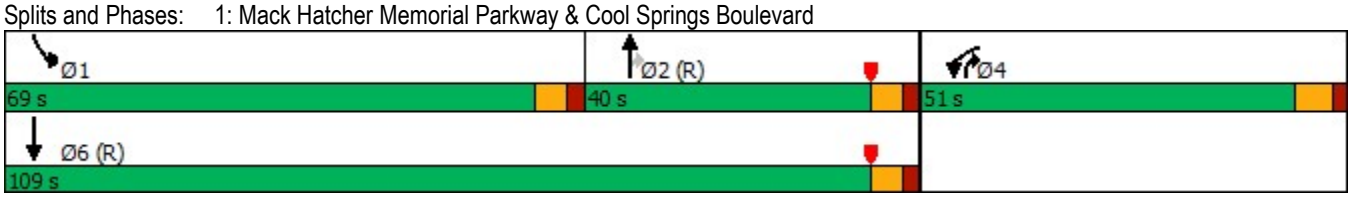
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	733	1557	544	516	1062	511
Future Volume (vph)	733	1557	544	516	1062	511
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	43.5	160.0	36.1	85.6	61.9	104.0
Actuated g/C Ratio	0.27	1.00	0.23	0.54	0.39	0.65
v/c Ratio	0.84	1.05	0.72	0.64	0.85	0.24
Control Delay	57.4	54.8	64.0	29.7	52.1	12.0
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	57.4	54.8	64.0	30.3	52.1	12.0
LOS	E	D	E	C	D	B
Approach Delay	55.6		47.6			39.1
Approach LOS	E		D			D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 48.6	Intersection LOS: D
Intersection Capacity Utilization 81.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Maximum Green (s)	44.5		34.0	44.5	63.0	103.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	39.4		44.6	39.4	57.5	108.1
10th %ile Term Code	Gap		Coord	Gap	Gap	Coord

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	733	1557	544	516	1062	511
Future Volume (veh/h)	733	1557	544	516	1062	511
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	780	0	579	549	1130	544
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	873		912	807	1296	2379
Arrive On Green	0.25	0.00	0.26	0.26	0.38	0.67
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	780	0	579	549	1130	544
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	34.9	0.0	23.1	41.1	48.6	9.6
Cycle Q Clear(g_c), s	34.9	0.0	23.1	41.1	48.6	9.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	873		912	807	1296	2379
V/C Ratio(X)	0.89		0.63	0.68	0.87	0.23
Avail Cap(c_a), veh/h	961		912	807	1361	2379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.7	0.0	52.8	29.3	46.4	10.3
Incr Delay (d2), s/veh	11.2	0.0	3.4	4.6	8.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.4	0.0	10.6	23.4	21.8	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.9	0.0	56.2	33.9	54.7	10.6
LnGrp LOS	E		E	C	D	B
Approach Vol, veh/h	780		1128			1674
Approach Delay, s/veh	68.9		45.3			40.3
Approach LOS	E		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	66.0	47.1		46.9		113.1
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	63.0	34.0		44.5		103.0
Max Q Clear Time (g_c+I1), s	50.6	43.1		36.9		11.6
Green Ext Time (p_c), s	9.4	0.0		3.5		7.9

Intersection Summary	
HCM 6th Ctrl Delay	48.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1591	6	11	2117	71	0	0	21	0	0	116
Future Vol, veh/h	0	1591	6	11	2117	71	0	0	21	0	0	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1675	6	12	2228	75	0	0	22	0	0	122

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1681	0	0	-	-	841	-	-	1114
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	377	-	-	0	0	308	0	0	203
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	377	-	-	-	-	308	-	-	203
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

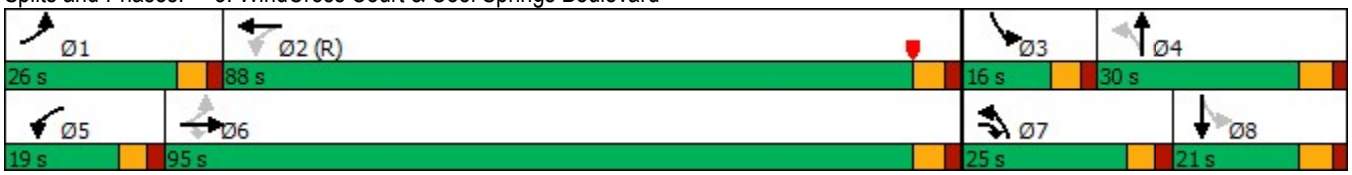
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	17.6	46.4
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	308	-	-	377	-	-	203
HCM Lane V/C Ratio	0.072	-	-	0.031	-	-	0.602
HCM Control Delay (s)	17.6	-	-	14.9	-	-	46.4
HCM Lane LOS	C	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	-	3.4

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	125	1512	19	132	2105	62	0	122	0
Future Volume (vph)	125	1512	19	132	2105	62	0	122	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	7	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	26.0	95.0	25.0	19.0	88.0	25.0	30.0	16.0	21.0
Total Split (%)	16.3%	59.4%	15.6%	11.9%	55.0%	15.6%	18.8%	10.0%	13.1%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	5.5	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	109.5	95.2	121.5	105.7	93.1	34.5	19.2	22.6	15.8
Actuated g/C Ratio	0.68	0.60	0.76	0.66	0.58	0.22	0.12	0.14	0.10
v/c Ratio	0.67	0.78	0.02	0.71	1.13	0.22	0.86	0.81	0.06
Control Delay	38.5	49.6	1.4	34.8	92.3	50.3	50.6	91.8	0.3
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	50.5	1.4	34.8	92.3	50.3	50.6	91.8	0.3
LOS	D	D	A	C	F	D	D	F	A
Approach Delay		49.0			89.0		50.5		77.8
Approach LOS		D			F		D		E

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 70.6	Intersection LOS: E
Intersection Capacity Utilization 108.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	26.0	95.0	25.0	19.0	88.0	25.0	30.0	16.0	21.0
Total Split (%)	16.3%	59.4%	15.6%	11.9%	55.0%	15.6%	18.8%	10.0%	13.1%
Maximum Green (s)	20.5	89.0	19.5	13.5	82.0	19.5	24.0	10.5	15.0
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	20.4	89.0	15.9	13.5	82.1	15.9	24.0	10.5	18.6
90th %ile Term Code	Gap	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
70th %ile Green (s)	16.7	89.0	13.6	13.5	85.8	13.6	24.0	10.5	20.9
70th %ile Term Code	Gap	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
50th %ile Green (s)	14.1	91.0	12.3	14.1	91.0	12.3	21.4	10.5	19.6
50th %ile Term Code	Gap	Coord	Gap	Gap	Coord	Gap	Gap	Max	Hold
30th %ile Green (s)	11.6	98.6	33.3	11.1	98.1	33.3	16.8	10.5	0.0
30th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip
10th %ile Green (s)	7.9	108.2	26.5	8.3	108.6	26.5	10.0	10.5	0.0
10th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Min	Max	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	1512	19	132	2105	24	62	0	268	122	0	22
Future Volume (veh/h)	125	1512	19	132	2105	24	62	0	268	122	0	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	1643	21	143	2288	26	67	0	130	133	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	2309	1105	226	2262	26	265	0	155	183	0	184
Arrive On Green	0.06	0.65	0.65	0.06	0.84	0.84	0.05	0.00	0.10	0.07	0.00	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3599	41	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	136	1643	21	143	1127	1187	67	0	130	133	0	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1863	1781	0	1585	1781	0	1585
Q Serve(g_s), s	8.0	48.2	0.7	4.7	100.5	100.5	5.3	0.0	12.9	10.5	0.0	2.2
Cycle Q Clear(g_c), s	8.0	48.2	0.7	4.7	100.5	100.5	5.3	0.0	12.9	10.5	0.0	2.2
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	2309	1105	226	1117	1171	265	0	155	183	0	184
V/C Ratio(X)	0.85	0.71	0.02	0.63	1.01	1.01	0.25	0.00	0.84	0.73	0.00	0.13
Avail Cap(c_a), veh/h	273	2309	1105	299	1117	1171	398	0	238	183	0	184
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.34	0.34	0.34	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.2	18.3	7.4	20.9	13.1	13.1	60.7	0.0	71.0	61.4	0.0	63.5
Incr Delay (d2), s/veh	15.9	1.3	0.0	1.4	18.1	18.8	1.1	0.0	23.5	16.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	19.1	0.2	2.5	25.1	26.6	2.5	0.0	6.3	5.7	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.1	19.6	7.5	22.4	31.3	32.0	61.8	0.0	94.5	77.6	0.0	64.2
LnGrp LOS	E	B	A	C	F	F	E	A	F	E	A	E
Approach Vol, veh/h		1800			2457			197			157	
Approach Delay, s/veh		23.4			31.1			83.4			75.5	
Approach LOS		C			C			F			E	

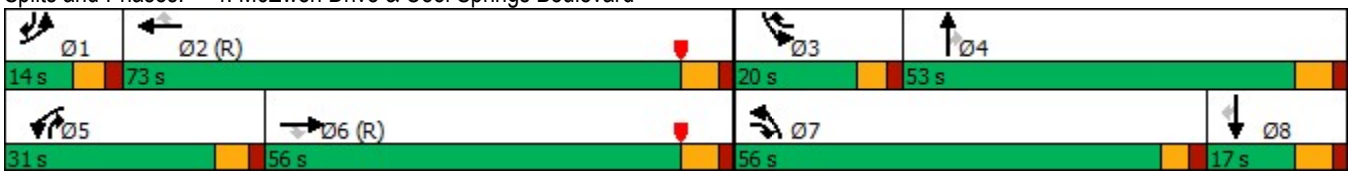
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	106.5	16.0	21.6	12.4	109.9	13.1	24.5
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	20.5	82.0	10.5	24.0	13.5	89.0	19.5	15.0
Max Q Clear Time (g_c+I1), s	10.0	102.5	12.5	14.9	6.7	50.2	7.3	4.2
Green Ext Time (p_c), s	0.4	0.0	0.0	0.7	0.3	29.1	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	31.8
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1124	739	268	1243	65	976	51	185	62	47	42
Future Volume (vph)	39	1124	739	268	1243	65	976	51	185	62	47	42
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	3	7	4	5	3	8	1
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	56.0	56.0	31.0	73.0	20.0	56.0	53.0	31.0	20.0	17.0	14.0
Total Split (%)	8.8%	35.0%	35.0%	19.4%	45.6%	12.5%	35.0%	33.1%	19.4%	12.5%	10.6%	8.8%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	5.5	5.5	6.5	6.0	5.5	6.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	7.8	50.4	107.4	27.6	72.7	101.2	50.5	40.0	70.7	20.9	10.3	21.3
Actuated g/C Ratio	0.05	0.32	0.67	0.17	0.45	0.63	0.32	0.25	0.44	0.13	0.06	0.13
v/c Ratio	0.49	1.10	0.71	0.96	0.84	0.07	0.98	0.12	0.27	0.29	0.42	0.14
Control Delay	107.6	90.5	13.8	105.8	46.2	1.1	76.5	43.1	12.9	71.8	83.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.6	90.5	13.8	105.8	46.2	1.1	76.5	43.1	12.9	71.8	83.2	0.9
LOS	F	F	B	F	D	A	E	D	B	E	F	A
Approach Delay		61.1			54.4			65.4			55.4	
Approach LOS		E			D			E			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 59.8	Intersection LOS: E
Intersection Capacity Utilization 96.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	56.0	56.0	31.0	73.0	20.0	56.0	53.0	31.0	20.0	17.0	14.0
Total Split (%)	8.8%	35.0%	35.0%	19.4%	45.6%	12.5%	35.0%	33.1%	19.4%	12.5%	10.6%	8.8%
Maximum Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	13.3	50.5	47.7	25.0	13.3	10.5	8.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Max	Max
30th %ile Green (s)	8.3	49.5	50.5	25.3	66.5	11.6	50.5	49.1	25.3	11.6	10.2	8.3
30th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Gap	Max
10th %ile Green (s)	0.0	53.9	50.5	37.6	97.5	50.5	50.5	0.0	37.6	50.5	0.0	0.0
10th %ile Term Code	Skip	Coord	Max	Gap	Coord	Hold	Max	Skip	Gap	Hold	Skip	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1124	739	268	1243	65	976	51	185	62	47	42
Future Volume (veh/h)	39	1124	739	268	1243	65	976	51	185	62	47	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	1222	803	291	1351	71	1061	55	201	67	51	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1111	996	278	1553	769	1091	618	771	85	117	149
Arrive On Green	0.03	0.31	0.31	0.16	0.44	0.44	0.32	0.33	0.33	0.05	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	1222	803	291	1351	71	1061	55	201	67	51	46
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	50.0	50.0	25.0	55.2	3.9	48.5	3.2	11.9	6.0	4.2	4.3
Cycle Q Clear(g_c), s	3.7	50.0	50.0	25.0	55.2	3.9	48.5	3.2	11.9	6.0	4.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1111	996	278	1553	769	1091	618	771	85	117	149
V/C Ratio(X)	0.74	1.10	0.81	1.05	0.87	0.09	0.97	0.09	0.26	0.78	0.44	0.31
Avail Cap(c_a), veh/h	89	1111	996	278	1553	769	1091	618	771	161	123	154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.53	0.53	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.8	55.0	22.4	67.5	40.9	22.2	54.1	37.0	24.2	75.3	72.3	67.6
Incr Delay (d2), s/veh	13.5	53.2	3.8	66.3	6.9	0.2	21.1	0.1	0.4	27.6	5.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	30.2	23.3	16.4	25.1	1.5	24.3	1.5	4.7	3.4	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.3	108.2	26.2	133.8	47.8	22.5	75.1	37.1	24.5	103.0	77.7	70.1
LnGrp LOS	F	F	C	F	D	C	E	D	C	F	E	E
Approach Vol, veh/h		2067			1713			1317			164	
Approach Delay, s/veh		76.0			61.4			65.8			85.9	
Approach LOS		E			E			E			F	

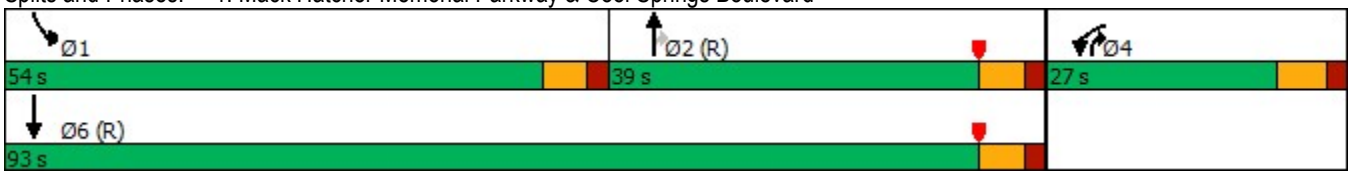
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	76.4	13.2	59.3	31.0	56.5	56.0	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	66.5	14.5	46.5	25.0	49.5	50.5	10.5
Max Q Clear Time (g_c+I1), s	5.7	57.2	8.0	13.9	27.0	52.0	50.5	6.3
Green Ext Time (p_c), s	0.0	7.7	0.1	2.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	69.0
HCM 6th LOS	E

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	290	945	502	649	1245	509
Future Volume (vph)	290	945	502	649	1245	509
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	20.5	120.0	33.0	53.0	48.0	87.0
Actuated g/C Ratio	0.17	1.00	0.28	0.44	0.40	0.72
v/c Ratio	0.54	0.64	0.54	0.96	0.94	0.21
Control Delay	34.0	11.0	39.5	55.3	49.4	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	11.0	39.5	55.3	49.4	5.6
LOS	C	B	D	E	D	A
Approach Delay	16.4		48.4			36.7
Approach LOS	B		D			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 33.9	Intersection LOS: C
Intersection Capacity Utilization 86.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Maximum Green (s)	20.5		33.0	20.5	48.0	87.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
10th %ile Term Code	Max		Coord	Max	Max	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	290	945	502	649	1245	509
Future Volume (veh/h)	290	945	502	649	1245	509
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	302	0	523	676	1297	530
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	498		1059	709	1375	2650
Arrive On Green	0.15	0.00	0.30	0.30	0.40	0.75
Sat Flow, veh/h	3319	1572	3647	1582	3456	3647
Grp Volume(v), veh/h	302	0	523	676	1297	530
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1582	1728	1777
Q Serve(g_s), s	10.2	0.0	14.5	35.8	43.4	5.3
Cycle Q Clear(g_c), s	10.2	0.0	14.5	35.8	43.4	5.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	498		1059	709	1375	2650
V/C Ratio(X)	0.61		0.49	0.95	0.94	0.20
Avail Cap(c_a), veh/h	567		1059	709	1382	2650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	34.7	28.2	34.8	4.6
Incr Delay (d2), s/veh	2.7	0.0	1.6	24.1	14.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	6.3	24.9	19.8	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.4	0.0	36.3	52.3	48.9	4.7
LnGrp LOS	D		D	D	D	A
Approach Vol, veh/h	302		1199			1827
Approach Delay, s/veh	50.4		45.3			36.1
Approach LOS	D		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	53.7	41.8		24.5		95.5
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	48.0	33.0		20.5		87.0
Max Q Clear Time (g_c+I1), s	45.4	37.8		12.2		7.3
Green Ext Time (p_c), s	2.3	0.0		1.3		7.6

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1861	6	15	1143	127	0	0	6	0	0	88
Future Vol, veh/h	0	1861	6	15	1143	127	0	0	6	0	0	88
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1959	6	16	1203	134	0	0	6	0	0	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1965	0	0	-	-	983	-	-	602
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	292	-	-	0	0	248	0	0	443
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	292	-	-	-	-	248	-	-	443
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

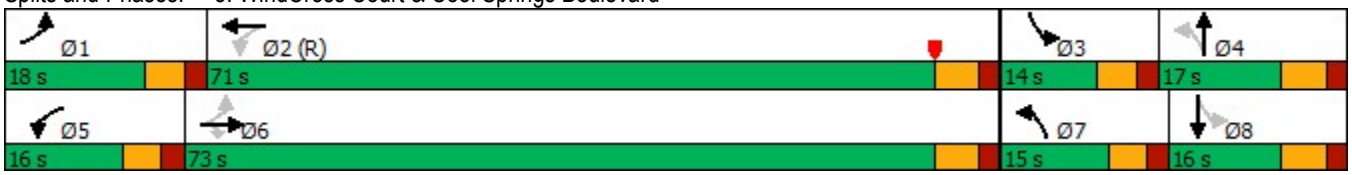
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	19.9	15.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	248	-	-	292	-	-	443
HCM Lane V/C Ratio	0.025	-	-	0.054	-	-	0.209
HCM Control Delay (s)	19.9	-	-	18	-	-	15.3
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	-	0.8

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	118	1662	92	204	1247	25	0	120	0
Future Volume (vph)	118	1662	92	204	1247	25	0	120	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	6	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	77.1	67.0	67.0	80.1	68.5	20.7	10.4	19.1	15.6
Actuated g/C Ratio	0.64	0.56	0.56	0.67	0.57	0.17	0.09	0.16	0.13
v/c Ratio	0.51	0.91	0.11	0.97	0.69	0.10	0.35	0.55	0.03
Control Delay	10.6	34.2	3.3	84.7	20.7	39.2	3.2	54.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	34.2	3.3	84.7	20.7	39.2	3.2	54.1	0.2
LOS	B	C	A	F	C	D	A	D	A
Approach Delay		31.2			29.5		10.6		48.9
Approach LOS		C			C		B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 85.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Maximum Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
90th %ile Term Code	Max	Coord	Coord	Max	Coord	Max	Hold	Max	Max
70th %ile Green (s)	10.1	67.0	67.0	10.5	67.4	9.5	11.0	8.5	10.0
70th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
50th %ile Green (s)	9.2	67.0	67.0	11.5	69.3	24.5	10.0	8.5	0.0
50th %ile Term Code	Gap	Coord	Coord	Max	Coord	Hold	Min	Max	Skip
30th %ile Green (s)	8.5	67.0	67.0	11.5	70.0	0.0	10.0	8.5	24.0
30th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold
10th %ile Green (s)	7.5	67.0	67.0	11.5	71.0	0.0	10.0	8.5	24.0
10th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	1662	92	204	1247	26	25	0	96	120	0	13
Future Volume (veh/h)	118	1662	92	204	1247	26	25	0	96	120	0	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1807	100	222	1355	28	27	0	104	130	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	2016	899	244	2156	45	246	0	131	210	0	181
Arrive On Green	0.05	0.57	0.57	0.09	0.61	0.61	0.04	0.00	0.08	0.07	0.00	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3560	74	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	128	1807	100	222	676	707	27	0	104	130	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1857	1781	0	1585	1781	0	1585
Q Serve(g_s), s	3.6	53.7	3.5	8.8	29.1	29.1	1.6	0.0	7.7	8.0	0.0	0.9
Cycle Q Clear(g_c), s	3.6	53.7	3.5	8.8	29.1	29.1	1.6	0.0	7.7	8.0	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	2016	899	244	1076	1125	246	0	131	210	0	181
V/C Ratio(X)	0.44	0.90	0.11	0.91	0.63	0.63	0.11	0.00	0.79	0.62	0.00	0.08
Avail Cap(c_a), veh/h	388	2016	899	244	1076	1125	317	0	145	210	0	181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	22.9	12.0	35.3	15.1	15.1	46.9	0.0	54.0	46.4	0.0	47.5
Incr Delay (d2), s/veh	1.5	6.1	0.1	28.8	2.1	2.0	0.4	0.0	28.2	7.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	22.1	1.3	8.4	11.4	11.8	0.8	0.0	4.1	4.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	28.9	12.1	64.1	17.2	17.1	47.4	0.0	82.2	54.4	0.0	47.9
LnGrp LOS	B	C	B	E	B	B	D	A	F	D	A	D
Approach Vol, veh/h		2035			1605			131			144	
Approach Delay, s/veh		27.2			23.6			75.0			53.7	
Approach LOS		C			C			E			D	

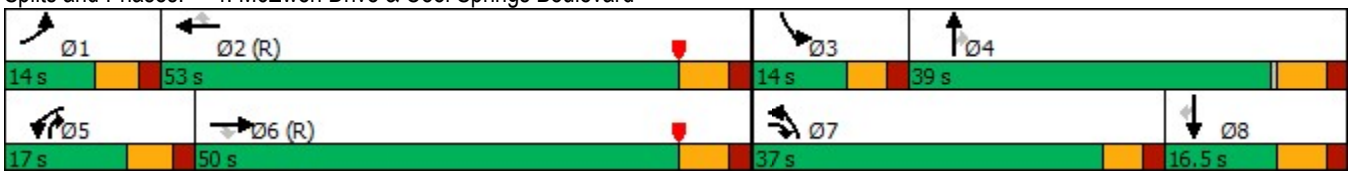
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	78.7	14.0	15.9	16.0	74.1	10.2	19.7
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	65.0	8.5	11.0	10.5	67.0	9.5	10.0
Max Q Clear Time (g_c+I1), s	5.6	31.1	10.0	9.7	10.8	55.7	3.6	2.9
Green Ext Time (p_c), s	0.2	21.5	0.0	0.1	0.0	10.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1036	819	97	906	43	536	34	232	58	45	35
Future Volume (vph)	26	1036	819	97	906	43	536	34	232	58	45	35
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	2	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	6.5	5.5	6.5	6.0	5.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	7.6	48.2	85.2	10.6	56.3	56.3	30.6	27.0	40.7	16.3	10.0	10.0
Actuated g/C Ratio	0.06	0.40	0.71	0.09	0.47	0.47	0.25	0.22	0.34	0.14	0.08	0.08
v/c Ratio	0.25	0.80	0.72	0.68	0.60	0.06	0.67	0.09	0.43	0.26	0.32	0.13
Control Delay	59.4	38.6	10.0	75.1	28.3	0.1	44.6	35.2	21.7	53.5	58.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	38.6	10.0	75.1	28.3	0.1	44.6	35.2	21.7	53.5	58.0	0.9
LOS	E	D	B	E	C	A	D	D	C	D	E	A
Approach Delay		26.4			31.5			37.6			41.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 120.5	
Actuated Cycle Length: 120.5	
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 30.7	Intersection LOS: C
Intersection Capacity Utilization 79.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Maximum Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	32.5	11.0	8.5	10.0	10.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
30th %ile Green (s)	0.0	43.5	31.5	11.0	60.5	60.5	31.5	0.0	11.0	48.0	10.0	10.0
30th %ile Term Code	Skip	Coord	Max	Max	Coord	Coord	Max	Skip	Max	Hold	Max	Max
10th %ile Green (s)	0.0	66.8	26.8	8.9	81.7	81.7	26.8	25.8	8.9	0.0	0.0	0.0
10th %ile Term Code	Skip	Coord	Gap	Gap	Coord	Coord	Gap	Hold	Gap	Skip	Skip	Skip

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 120.5
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1036	819	97	906	43	536	34	232	58	45	35
Future Volume (veh/h)	26	1036	819	97	906	43	536	34	232	58	45	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1126	890	105	985	47	583	37	252	63	49	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1544	1014	130	1695	756	709	430	480	104	156	132
Arrive On Green	0.03	0.43	0.43	0.07	0.48	0.48	0.21	0.23	0.23	0.06	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	28	1126	890	105	985	47	583	37	252	63	49	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	31.5	52.1	7.0	24.1	1.9	19.4	1.9	15.8	4.1	3.0	2.7
Cycle Q Clear(g_c), s	1.9	31.5	52.1	7.0	24.1	1.9	19.4	1.9	15.8	4.1	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1544	1014	130	1695	756	709	430	480	104	156	132
V/C Ratio(X)	0.52	0.73	0.88	0.81	0.58	0.06	0.82	0.09	0.52	0.60	0.31	0.29
Avail Cap(c_a), veh/h	119	1544	1014	163	1695	756	907	507	545	126	156	132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	28.1	17.8	54.8	22.7	16.9	45.6	36.3	34.7	55.1	51.8	51.7
Incr Delay (d2), s/veh	3.6	1.0	3.9	23.2	1.5	0.2	6.7	0.2	1.9	11.5	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	13.0	19.6	3.9	9.9	0.7	8.9	0.9	6.3	2.2	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.9	29.1	21.7	78.0	24.2	17.1	52.3	36.5	36.6	66.6	54.2	54.2
LnGrp LOS	E	C	C	E	C	B	D	D	D	E	D	D
Approach Vol, veh/h		2044			1137			872			150	
Approach Delay, s/veh		26.3			28.8			47.1			59.4	
Approach LOS		C			C			D			E	

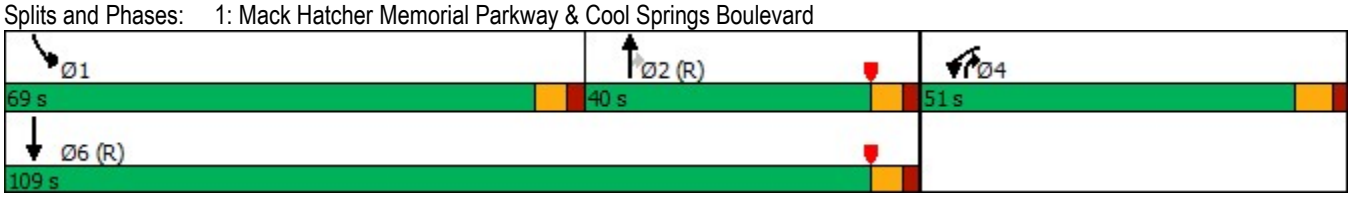
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	63.7	12.5	34.1	14.8	58.6	30.1	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	46.5	8.5	32.5	11.0	43.5	31.5	10.0
Max Q Clear Time (g_c+I1), s	3.9	26.1	6.1	17.8	9.0	54.1	21.4	5.0
Green Ext Time (p_c), s	0.0	11.5	0.0	1.9	0.1	0.0	3.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	741	1565	544	528	1074	511
Future Volume (vph)	741	1565	544	528	1074	511
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	43.5	160.0	35.9	85.4	62.1	104.0
Actuated g/C Ratio	0.27	1.00	0.22	0.53	0.39	0.65
v/c Ratio	0.84	1.05	0.73	0.66	0.86	0.24
Control Delay	57.2	54.9	64.4	30.5	52.5	12.0
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	57.2	54.9	64.4	31.1	52.5	12.0
LOS	E	D	E	C	D	B
Approach Delay	55.6		48.0			39.5
Approach LOS	E		D			D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 48.8	Intersection LOS: D
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Maximum Green (s)	44.5		34.0	44.5	63.0	103.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	39.7		43.3	39.7	58.5	107.8
10th %ile Term Code	Gap		Coord	Gap	Gap	Coord

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	741	1565	544	528	1074	511
Future Volume (veh/h)	741	1565	544	528	1074	511
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	788	0	579	562	1143	544
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	879		899	804	1303	2372
Arrive On Green	0.25	0.00	0.25	0.25	0.38	0.67
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	788	0	579	562	1143	544
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	35.2	0.0	23.3	40.5	49.3	9.6
Cycle Q Clear(g_c), s	35.2	0.0	23.3	40.5	49.3	9.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	879		899	804	1303	2372
V/C Ratio(X)	0.90		0.64	0.70	0.88	0.23
Avail Cap(c_a), veh/h	961		899	804	1361	2372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.6	0.0	53.3	29.4	46.4	10.4
Incr Delay (d2), s/veh	11.5	0.0	3.5	5.0	8.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.6	0.0	10.7	24.1	22.1	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.1	0.0	56.9	34.4	54.9	10.7
LnGrp LOS	E		E	C	D	B
Approach Vol, veh/h	788		1141			1687
Approach Delay, s/veh	69.1		45.8			40.7
Approach LOS	E		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	66.3	46.5		47.2		112.8
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	63.0	34.0		44.5		103.0
Max Q Clear Time (g_c+I1), s	51.3	42.5		37.2		11.6
Green Ext Time (p_c), s	9.1	0.0		3.4		7.9

Intersection Summary	
HCM 6th Ctrl Delay	48.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1614	6	11	2117	126	0	0	21	0	0	132
Future Vol, veh/h	0	1614	6	11	2117	126	0	0	21	0	0	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1699	6	12	2228	133	0	0	22	0	0	139

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1705	0	0	-	-	853	-	-	1114
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	369	-	-	0	0	302	0	0	203
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	369	-	-	-	-	302	-	-	203
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

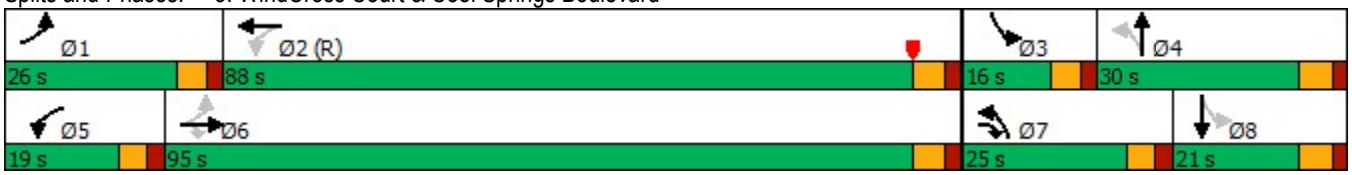
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	17.9	54.2
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	302	-	-	369	-	-	203
HCM Lane V/C Ratio	0.073	-	-	0.031	-	-	0.684
HCM Control Delay (s)	17.9	-	-	15.1	-	-	54.2
HCM Lane LOS	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	-	4.3

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	148	1512	19	132	2160	62	0	158	0
Future Volume (vph)	148	1512	19	132	2160	62	0	158	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	7	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	26.0	95.0	25.0	19.0	88.0	25.0	30.0	16.0	21.0
Total Split (%)	16.3%	59.4%	15.6%	11.9%	55.0%	15.6%	18.8%	10.0%	13.1%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	5.5	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	110.5	94.6	121.2	103.6	91.0	35.0	19.8	22.8	16.0
Actuated g/C Ratio	0.69	0.59	0.76	0.65	0.57	0.22	0.12	0.14	0.10
v/c Ratio	0.73	0.79	0.02	0.72	1.18	0.21	0.86	1.05	0.06
Control Delay	43.6	49.8	1.3	35.0	117.3	49.9	53.1	141.4	0.3
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	50.7	1.3	35.0	117.3	49.9	53.1	141.4	0.3
LOS	D	D	A	C	F	D	D	F	A
Approach Delay		49.5			112.6		52.5		124.2
Approach LOS		D			F		D		F

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 85.2	Intersection LOS: F
Intersection Capacity Utilization 113.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	26.0	95.0	25.0	19.0	88.0	25.0	30.0	16.0	21.0
Total Split (%)	16.3%	59.4%	15.6%	11.9%	55.0%	15.6%	18.8%	10.0%	13.1%
Maximum Green (s)	20.5	89.0	19.5	13.5	82.0	19.5	24.0	10.5	15.0
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	20.5	89.0	15.9	13.5	82.0	15.9	24.0	10.5	18.6
90th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
70th %ile Green (s)	19.1	89.0	13.6	13.5	83.4	13.6	24.0	10.5	20.9
70th %ile Term Code	Gap	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
50th %ile Green (s)	16.3	90.0	12.2	14.3	88.0	12.2	22.2	10.5	20.5
50th %ile Term Code	Gap	Coord	Gap	Gap	Coord	Gap	Gap	Max	Hold
30th %ile Green (s)	13.5	97.6	34.2	11.2	95.3	34.2	17.7	10.5	0.0
30th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip
10th %ile Green (s)	9.5	107.2	27.4	8.4	106.1	27.4	10.9	10.5	0.0
10th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	1512	19	132	2160	24	62	0	268	158	0	22
Future Volume (veh/h)	148	1512	19	132	2160	24	62	0	268	158	0	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	1643	21	143	2348	26	67	0	139	172	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	2285	1094	224	2191	24	273	0	164	183	0	193
Arrive On Green	0.08	0.64	0.64	0.04	0.61	0.61	0.05	0.00	0.10	0.07	0.00	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3600	40	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	161	1643	21	143	1157	1217	67	0	139	172	0	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1863	1781	0	1585	1781	0	1585
Q Serve(g_s), s	10.2	49.1	0.7	4.8	97.4	97.4	5.3	0.0	13.8	10.5	0.0	2.2
Cycle Q Clear(g_c), s	10.2	49.1	0.7	4.8	97.4	97.4	5.3	0.0	13.8	10.5	0.0	2.2
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	185	2285	1094	224	1082	1134	273	0	164	183	0	193
V/C Ratio(X)	0.87	0.72	0.02	0.64	1.07	1.07	0.25	0.00	0.85	0.94	0.00	0.12
Avail Cap(c_a), veh/h	273	2285	1094	296	1082	1134	405	0	238	183	0	193
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.30	0.30	0.30	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.8	19.0	7.8	21.9	31.3	31.3	59.9	0.0	70.5	65.0	0.0	62.7
Incr Delay (d2), s/veh	20.7	1.4	0.0	1.3	37.6	39.0	1.0	0.0	25.0	49.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	19.6	0.2	2.5	50.2	53.0	2.5	0.0	6.8	4.5	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.5	20.4	7.8	23.2	68.9	70.3	60.9	0.0	95.5	114.9	0.0	63.3
LnGrp LOS	E	C	A	C	F	F	E	A	F	F	A	E
Approach Vol, veh/h		1825			2517			206			196	
Approach Delay, s/veh		25.4			67.0			84.2			108.6	
Approach LOS		C			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.1	103.4	16.0	22.5	12.6	108.9	13.1	25.4
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	20.5	82.0	10.5	24.0	13.5	89.0	19.5	15.0
Max Q Clear Time (g_c+I1), s	12.2	99.4	12.5	15.8	6.8	51.1	7.3	4.2
Green Ext Time (p_c), s	0.4	0.0	0.0	0.7	0.3	28.6	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	53.4
HCM 6th LOS	D

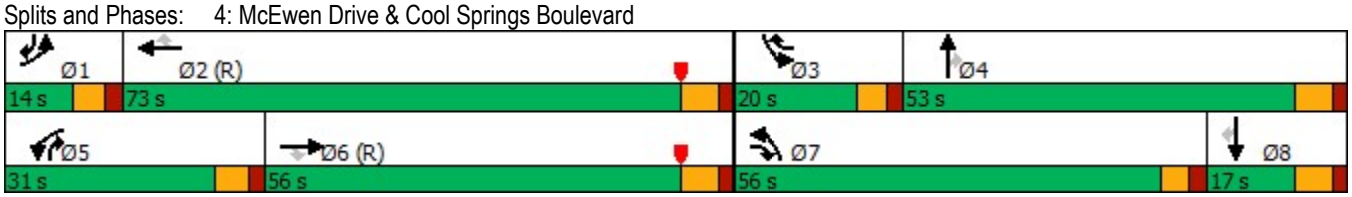
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1150	749	268	1282	65	992	51	185	62	47	42
Future Volume (vph)	39	1150	749	268	1282	65	992	51	185	62	47	42
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	3	7	4	5	3	8	1
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	56.0	56.0	31.0	73.0	20.0	56.0	53.0	31.0	20.0	17.0	14.0
Total Split (%)	8.8%	35.0%	35.0%	19.4%	45.6%	12.5%	35.0%	33.1%	19.4%	12.5%	10.6%	8.8%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	5.5	5.5	6.5	6.0	5.5	6.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	7.8	50.4	107.4	27.6	72.7	101.2	50.5	40.0	70.7	20.9	10.3	21.3
Actuated g/C Ratio	0.05	0.32	0.67	0.17	0.45	0.63	0.32	0.25	0.44	0.13	0.06	0.13
v/c Ratio	0.49	1.12	0.72	0.96	0.87	0.07	1.00	0.12	0.27	0.29	0.42	0.14
Control Delay	105.6	100.3	13.6	105.8	47.8	1.1	80.2	43.1	13.0	71.8	83.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.6	100.3	13.6	105.8	47.8	1.1	80.2	43.1	13.0	71.8	83.2	0.9
LOS	F	F	B	F	D	A	F	D	B	E	F	A
Approach Delay		66.9			55.5			68.5			55.4	
Approach LOS		E			E			E			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 63.2	Intersection LOS: E
Intersection Capacity Utilization 97.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	56.0	56.0	31.0	73.0	20.0	56.0	53.0	31.0	20.0	17.0	14.0
Total Split (%)	8.8%	35.0%	35.0%	19.4%	45.6%	12.5%	35.0%	33.1%	19.4%	12.5%	10.6%	8.8%
Maximum Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	14.5	50.5	46.5	25.0	14.5	10.5	8.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	49.5	50.5	25.0	66.5	13.3	50.5	47.7	25.0	13.3	10.5	8.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Max	Max
30th %ile Green (s)	8.3	49.5	50.5	25.3	66.5	11.6	50.5	49.1	25.3	11.6	10.2	8.3
30th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Gap	Max
10th %ile Green (s)	0.0	53.9	50.5	37.6	97.5	50.5	50.5	0.0	37.6	50.5	0.0	0.0
10th %ile Term Code	Skip	Coord	Max	Gap	Coord	Hold	Max	Skip	Gap	Hold	Skip	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1150	749	268	1282	65	992	51	185	62	47	42
Future Volume (veh/h)	39	1150	749	268	1282	65	992	51	185	62	47	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	1250	814	291	1393	71	1078	55	201	67	51	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1111	996	278	1553	769	1091	618	771	85	117	149
Arrive On Green	0.03	0.31	0.31	0.16	0.44	0.44	0.32	0.33	0.33	0.05	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	1250	814	291	1393	71	1078	55	201	67	51	46
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	50.0	50.0	25.0	58.1	3.9	49.6	3.2	11.9	6.0	4.2	4.3
Cycle Q Clear(g_c), s	3.7	50.0	50.0	25.0	58.1	3.9	49.6	3.2	11.9	6.0	4.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1111	996	278	1553	769	1091	618	771	85	117	149
V/C Ratio(X)	0.74	1.13	0.82	1.05	0.90	0.09	0.99	0.09	0.26	0.78	0.44	0.31
Avail Cap(c_a), veh/h	89	1111	996	278	1553	769	1091	618	771	161	123	154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.8	55.0	22.7	67.5	41.7	22.2	54.5	37.0	24.2	75.3	72.3	67.6
Incr Delay (d2), s/veh	12.4	62.8	3.7	66.3	8.5	0.2	24.4	0.1	0.4	27.6	5.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	31.7	23.8	16.4	26.7	1.5	25.3	1.5	4.7	3.4	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	89.2	117.8	26.5	133.8	50.2	22.5	78.9	37.1	24.5	103.0	77.7	70.1
LnGrp LOS	F	F	C	F	D	C	E	D	C	F	E	E
Approach Vol, veh/h		2106			1755			1334			164	
Approach Delay, s/veh		81.9			63.0			69.0			85.9	
Approach LOS		F			E			E			F	

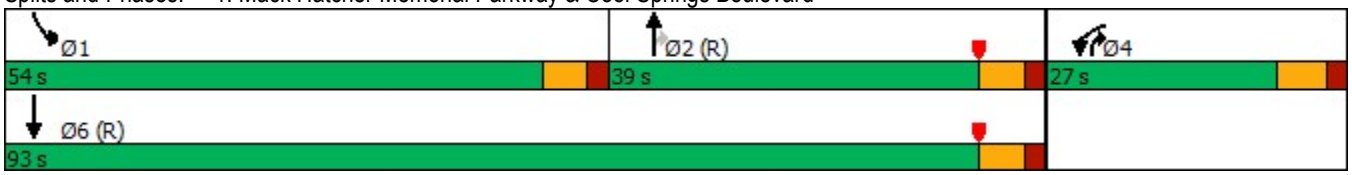
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	76.4	13.2	59.3	31.0	56.5	56.0	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	66.5	14.5	46.5	25.0	49.5	50.5	10.5
Max Q Clear Time (g_c+I1), s	5.7	60.1	8.0	13.9	27.0	52.0	51.6	6.3
Green Ext Time (p_c), s	0.0	5.6	0.1	2.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	72.6
HCM 6th LOS	E

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	297	1013	554	697	1343	563
Future Volume (vph)	297	1013	554	697	1343	563
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	20.5	120.0	33.0	53.0	48.0	87.0
Actuated g/C Ratio	0.17	1.00	0.28	0.44	0.40	0.72
v/c Ratio	0.55	0.68	0.59	1.04	1.02	0.23
Control Delay	35.0	13.1	40.7	74.6	65.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	13.1	40.7	74.6	65.1	5.7
LOS	C	B	D	E	E	A
Approach Delay	18.1		59.6			47.6
Approach LOS	B		E			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 42.3	Intersection LOS: D
Intersection Capacity Utilization 92.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Maximum Green (s)	20.5		33.0	20.5	48.0	87.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
10th %ile Term Code	Max		Coord	Max	Max	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	297	1013	554	697	1343	563
Future Volume (veh/h)	297	1013	554	697	1343	563
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	309	0	577	726	1399	586
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	498		1051	706	1382	2650
Arrive On Green	0.15	0.00	0.30	0.30	0.40	0.75
Sat Flow, veh/h	3319	1572	3647	1582	3456	3647
Grp Volume(v), veh/h	309	0	577	726	1399	586
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1582	1728	1777
Q Serve(g_s), s	10.5	0.0	16.4	35.5	48.0	6.0
Cycle Q Clear(g_c), s	10.5	0.0	16.4	35.5	48.0	6.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	498		1051	706	1382	2650
V/C Ratio(X)	0.62		0.55	1.03	1.01	0.22
Avail Cap(c_a), veh/h	567		1051	706	1382	2650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.8	0.0	35.5	28.3	36.0	4.6
Incr Delay (d2), s/veh	3.0	0.0	2.1	41.4	27.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	7.1	29.1	24.1	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.8	0.0	37.6	69.6	63.2	4.8
LnGrp LOS	D		D	F	F	A
Approach Vol, veh/h	309		1303			1985
Approach Delay, s/veh	50.8		55.4			46.0
Approach LOS	D		E			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	54.0	41.5		24.5		95.5
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	48.0	33.0		20.5		87.0
Max Q Clear Time (g_c+I1), s	50.0	37.5		12.5		8.0
Green Ext Time (p_c), s	0.0	0.0		1.3		8.7

Intersection Summary	
HCM 6th Ctrl Delay	49.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2001	6	15	1235	108	0	0	6	0	0	68
Future Vol, veh/h	0	2001	6	15	1235	108	0	0	6	0	0	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2106	6	16	1300	114	0	0	6	0	0	72

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2112	0	0	-	-	1056	-	-	650
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	256	-	-	0	0	222	0	0	412
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	256	-	-	-	-	222	-	-	412
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

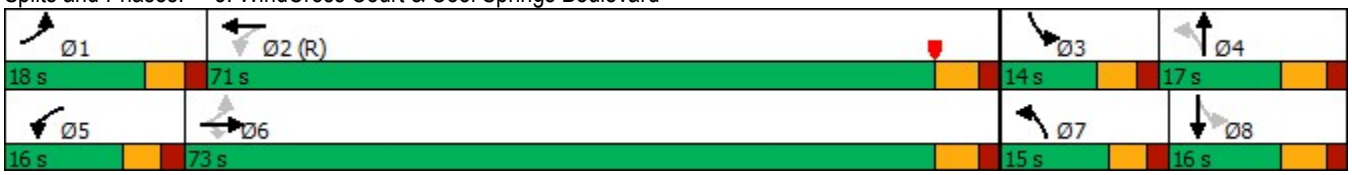
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	21.7	15.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	-	-	256	-	-	412
HCM Lane V/C Ratio	0.028	-	-	0.062	-	-	0.174
HCM Control Delay (s)	21.7	-	-	20	-	-	15.6
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	110	1802	101	225	1323	25	0	74	0
Future Volume (vph)	110	1802	101	225	1323	25	0	74	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	6	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	77.0	67.0	67.0	83.2	71.4	19.1	10.4	16.3	12.8
Actuated g/C Ratio	0.64	0.56	0.56	0.69	0.60	0.16	0.09	0.14	0.11
v/c Ratio	0.49	0.99	0.12	0.91	0.70	0.11	0.33	0.38	0.04
Control Delay	9.7	41.2	3.6	71.8	20.3	39.4	2.8	48.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	41.2	3.6	71.8	20.3	39.4	2.8	48.6	0.2
LOS	A	D	A	E	C	D	A	D	A
Approach Delay		37.5			27.7		10.3		41.4
Approach LOS		D			C		B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 32.7	Intersection LOS: C
Intersection Capacity Utilization 87.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Maximum Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
90th %ile Term Code	Max	Coord	Coord	Max	Coord	Max	Hold	Max	Max
70th %ile Green (s)	10.7	67.0	67.0	10.5	66.8	9.5	11.0	8.5	10.0
70th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
50th %ile Green (s)	9.0	67.0	67.0	11.5	69.5	24.5	10.0	8.5	0.0
50th %ile Term Code	Gap	Coord	Coord	Max	Coord	Hold	Min	Max	Skip
30th %ile Green (s)	8.3	67.0	67.0	11.5	70.2	0.0	10.0	8.5	24.0
30th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold
10th %ile Green (s)	7.0	67.1	67.1	25.4	85.5	0.0	10.0	0.0	10.0
10th %ile Term Code	Gap	Coord	Coord	Gap	Coord	Skip	Min	Skip	Hold

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1802	101	225	1323	26	25	0	96	74	0	13
Future Volume (veh/h)	110	1802	101	225	1323	26	25	0	96	74	0	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	1959	110	245	1438	28	27	0	104	80	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	275	2047	913	227	2191	43	246	0	131	194	0	167
Arrive On Green	0.05	0.58	0.58	0.09	0.61	0.61	0.04	0.00	0.08	0.06	0.00	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3565	69	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	120	1959	110	245	716	750	27	0	104	80	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1858	1781	0	1585	1781	0	1585
Q Serve(g_s), s	3.2	62.5	3.8	10.5	31.2	31.3	1.6	0.0	7.7	4.8	0.0	1.0
Cycle Q Clear(g_c), s	3.2	62.5	3.8	10.5	31.2	31.3	1.6	0.0	7.7	4.8	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	275	2047	913	227	1092	1142	246	0	131	194	0	167
V/C Ratio(X)	0.44	0.96	0.12	1.08	0.66	0.66	0.11	0.00	0.79	0.41	0.00	0.08
Avail Cap(c_a), veh/h	373	2047	913	227	1092	1142	317	0	145	210	0	167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.5	24.0	11.6	40.6	14.9	14.9	46.9	0.0	54.0	46.2	0.0	48.5
Incr Delay (d2), s/veh	1.5	11.6	0.1	73.1	2.2	2.1	0.4	0.0	28.2	3.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	26.9	1.4	11.3	12.1	12.6	0.8	0.0	4.1	2.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	35.6	11.7	113.7	17.1	17.1	47.4	0.0	82.2	49.2	0.0	48.9
LnGrp LOS	B	D	B	F	B	B	D	A	F	D	A	D
Approach Vol, veh/h		2189			1711			131			94	
Approach Delay, s/veh		33.3			30.9			75.0			49.2	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	79.7	12.9	15.9	16.0	75.1	10.2	18.6
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	65.0	8.5	11.0	10.5	67.0	9.5	10.0
Max Q Clear Time (g_c+I1), s	5.2	33.3	6.8	9.7	12.5	64.5	3.6	3.0
Green Ext Time (p_c), s	0.2	21.9	0.0	0.1	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	34.0
HCM 6th LOS	C

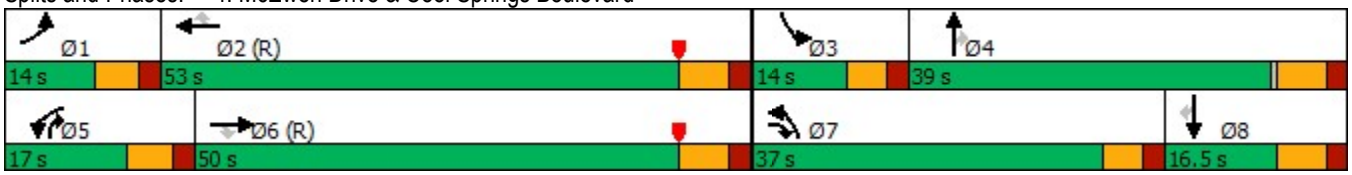
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1098	861	107	974	43	566	34	256	58	45	35
Future Volume (vph)	26	1098	861	107	974	43	566	34	256	58	45	35
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	2	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	6.5	5.5	6.5	6.0	5.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	7.6	47.7	85.1	10.7	56.0	56.0	30.9	27.3	41.2	16.3	10.0	10.0
Actuated g/C Ratio	0.06	0.40	0.71	0.09	0.46	0.46	0.26	0.23	0.34	0.14	0.08	0.08
v/c Ratio	0.25	0.85	0.76	0.74	0.64	0.06	0.70	0.09	0.47	0.26	0.32	0.13
Control Delay	59.4	41.8	12.0	80.4	29.6	0.1	45.4	35.2	23.4	53.5	58.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	41.8	12.0	80.4	29.6	0.1	45.4	35.2	23.4	53.5	58.0	0.9
LOS	E	D	B	F	C	A	D	D	C	D	E	A
Approach Delay		29.1			33.3			38.4			41.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 120.5	
Actuated Cycle Length: 120.5	
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 32.6	Intersection LOS: C
Intersection Capacity Utilization 82.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Maximum Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	32.5	11.0	8.5	10.0	10.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
30th %ile Green (s)	0.0	43.5	31.5	11.0	60.5	60.5	31.5	0.0	11.0	48.0	10.0	10.0
30th %ile Term Code	Skip	Coord	Max	Max	Coord	Coord	Max	Skip	Max	Hold	Max	Max
10th %ile Green (s)	0.0	64.3	28.5	9.7	80.0	80.0	28.5	27.5	9.7	0.0	0.0	0.0
10th %ile Term Code	Skip	Coord	Gap	Gap	Coord	Coord	Gap	Hold	Gap	Skip	Skip	Skip

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 120.5
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1098	861	107	974	43	566	34	256	58	45	35
Future Volume (veh/h)	26	1098	861	107	974	43	566	34	256	58	45	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1193	936	116	1059	47	615	37	278	63	49	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1490	1003	142	1665	743	738	446	504	104	156	132
Arrive On Green	0.03	0.42	0.42	0.08	0.47	0.47	0.21	0.24	0.24	0.06	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	28	1193	936	116	1059	47	615	37	278	63	49	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	35.2	50.3	7.7	27.1	1.9	20.4	1.8	17.4	4.1	3.0	2.7
Cycle Q Clear(g_c), s	1.9	35.2	50.3	7.7	27.1	1.9	20.4	1.8	17.4	4.1	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1490	1003	142	1665	743	738	446	504	104	156	132
V/C Ratio(X)	0.52	0.80	0.93	0.82	0.64	0.06	0.83	0.08	0.55	0.60	0.31	0.29
Avail Cap(c_a), veh/h	119	1490	1003	163	1665	743	907	507	555	126	156	132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.17	0.17	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	30.4	19.7	54.4	24.1	17.5	45.1	35.5	33.9	55.1	51.8	51.7
Incr Delay (d2), s/veh	1.9	0.8	3.8	26.1	1.9	0.2	7.3	0.2	2.0	11.5	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	14.5	22.4	4.4	11.3	0.8	9.5	0.9	7.0	2.2	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.2	31.3	23.5	80.5	26.0	17.6	52.4	35.7	35.9	66.6	54.2	54.2
LnGrp LOS	E	C	C	F	C	B	D	D	D	E	D	D
Approach Vol, veh/h		2157			1222			930			150	
Approach Delay, s/veh		28.3			30.9			46.8			59.4	
Approach LOS		C			C			D			E	

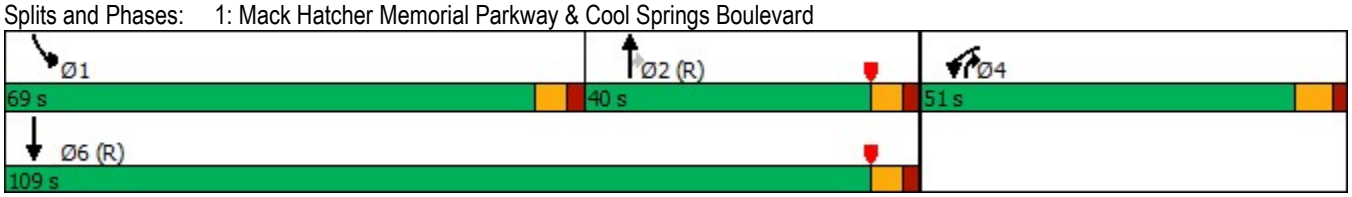
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	62.7	12.5	35.1	15.5	56.8	31.1	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	46.5	8.5	32.5	11.0	43.5	31.5	10.0
Max Q Clear Time (g_c+I1), s	3.9	29.1	6.1	19.4	9.7	52.3	22.4	5.0
Green Ext Time (p_c), s	0.0	11.0	0.0	2.0	0.0	0.0	3.2	0.2

Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	783	1680	601	554	1143	565
Future Volume (vph)	783	1680	601	554	1143	565
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	44.1	160.0	34.5	84.6	62.9	103.4
Actuated g/C Ratio	0.28	1.00	0.22	0.53	0.39	0.65
v/c Ratio	0.88	1.13	0.84	0.70	0.90	0.26
Control Delay	56.6	87.9	71.0	32.8	55.9	12.5
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0
Total Delay	56.6	87.9	71.0	34.4	55.9	12.5
LOS	E	F	E	C	E	B
Approach Delay	77.9		53.4			41.5
Approach LOS	E		D			D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 60.9	Intersection LOS: E
Intersection Capacity Utilization 87.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Maximum Green (s)	44.5		34.0	44.5	63.0	103.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	42.7		36.5	42.7	62.3	104.8
10th %ile Term Code	Gap		Coord	Gap	Gap	Coord

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	783	1680	601	554	1143	565
Future Volume (veh/h)	783	1680	601	554	1143	565
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	833	0	639	589	1216	601
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	910		835	790	1334	2340
Arrive On Green	0.26	0.00	0.24	0.24	0.39	0.66
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	833	0	639	589	1216	601
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	37.4	0.0	26.8	37.6	53.3	11.1
Cycle Q Clear(g_c), s	37.4	0.0	26.8	37.6	53.3	11.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	910		835	790	1334	2340
V/C Ratio(X)	0.92		0.76	0.75	0.91	0.26
Avail Cap(c_a), veh/h	961		835	790	1361	2340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.2	0.0	57.1	29.6	46.5	11.2
Incr Delay (d2), s/veh	13.5	0.0	6.6	6.3	10.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.8	0.0	12.6	25.5	24.3	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	70.7	0.0	63.7	35.9	57.5	11.5
LnGrp LOS	E		E	D	E	B
Approach Vol, veh/h	833		1228			1817
Approach Delay, s/veh	70.7		50.3			42.3
Approach LOS	E		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	67.7	43.6		48.6		111.4
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	63.0	34.0		44.5		103.0
Max Q Clear Time (g_c+I1), s	55.3	39.6		39.4		13.1
Green Ext Time (p_c), s	6.4	0.0		2.7		9.0

Intersection Summary	
HCM 6th Ctrl Delay	50.9
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1707	6	11	2284	71	0	0	21	0	0	116
Future Vol, veh/h	0	1707	6	11	2284	71	0	0	21	0	0	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1797	6	12	2404	75	0	0	22	0	0	122

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1803	0	0	-	-	902	-	-	1202
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	338	-	-	0	0	281	0	0	177
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	338	-	-	-	-	281	-	-	177
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

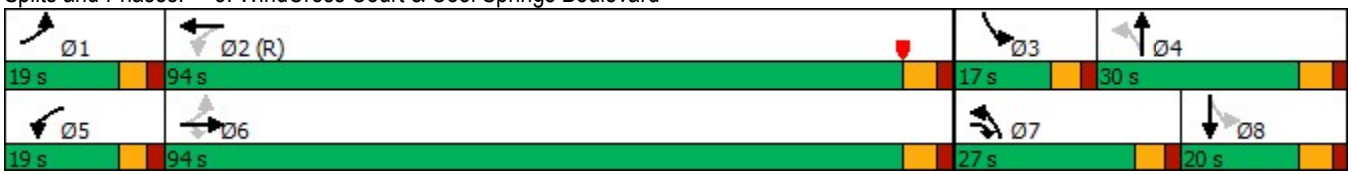
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	18.9	61.3
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	281	-	-	338	-	-	177
HCM Lane V/C Ratio	0.079	-	-	0.034	-	-	0.69
HCM Control Delay (s)	18.9	-	-	16	-	-	61.3
HCM Lane LOS	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	-	4.2

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	125	1613	40	124	2267	62	0	122	0
Future Volume (vph)	125	1613	40	124	2267	62	0	122	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	7	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	19.0	94.0	27.0	19.0	94.0	27.0	30.0	17.0	20.0
Total Split (%)	11.9%	58.8%	16.9%	11.9%	58.8%	16.9%	18.8%	10.6%	12.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	5.5	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	106.3	93.4	120.5	106.0	93.3	35.5	19.8	24.5	16.7
Actuated g/C Ratio	0.66	0.58	0.75	0.66	0.58	0.22	0.12	0.15	0.10
v/c Ratio	0.74	0.85	0.04	0.74	1.21	0.21	0.86	0.76	0.07
Control Delay	43.0	53.1	4.8	37.5	127.2	49.0	54.0	82.8	0.4
Queue Delay	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	55.1	4.8	37.5	127.2	49.0	54.0	82.8	0.4
LOS	D	E	A	D	F	D	D	F	A
Approach Delay		53.2			122.6		53.0		70.2
Approach LOS		D			F		D		E

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.21	
Intersection Signal Delay: 89.6	Intersection LOS: F
Intersection Capacity Utilization 112.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	19.0	94.0	27.0	19.0	94.0	27.0	30.0	17.0	20.0
Total Split (%)	11.9%	58.8%	16.9%	11.9%	58.8%	16.9%	18.8%	10.6%	12.5%
Maximum Green (s)	13.5	88.0	21.5	13.5	88.0	21.5	24.0	11.5	14.0
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	13.5	88.0	15.8	13.5	88.0	15.8	24.0	11.5	19.7
90th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
70th %ile Green (s)	13.5	88.0	13.6	13.5	88.0	13.6	24.0	11.5	21.9
70th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
50th %ile Green (s)	14.5	88.7	12.2	14.4	88.6	12.2	22.4	11.5	21.7
50th %ile Term Code	Gap	Coord	Gap	Gap	Coord	Gap	Gap	Max	Hold
30th %ile Green (s)	12.0	96.2	35.3	11.5	95.7	35.3	17.8	11.5	0.0
30th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip
10th %ile Green (s)	8.3	106.3	28.5	8.2	106.2	28.5	11.0	11.5	0.0
10th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	1613	40	124	2267	24	62	0	268	122	0	22
Future Volume (veh/h)	125	1613	40	124	2267	24	62	0	268	122	0	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	1753	43	135	2464	26	67	0	140	133	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	2269	1087	195	2223	23	274	0	165	194	0	203
Arrive On Green	0.06	0.64	0.64	0.04	0.62	0.62	0.05	0.00	0.10	0.07	0.00	0.13
Sat Flow, veh/h	1781	3554	1585	1781	3602	38	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	136	1753	43	135	1213	1277	67	0	140	133	0	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1864	1781	0	1585	1781	0	1585
Q Serve(g_s), s	8.0	56.3	1.4	4.5	98.7	98.7	5.3	0.0	13.9	10.6	0.0	2.1
Cycle Q Clear(g_c), s	8.0	56.3	1.4	4.5	98.7	98.7	5.3	0.0	13.9	10.6	0.0	2.1
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	2269	1087	195	1096	1150	274	0	165	194	0	203
V/C Ratio(X)	0.86	0.77	0.04	0.69	1.11	1.11	0.24	0.00	0.85	0.68	0.00	0.12
Avail Cap(c_a), veh/h	195	2269	1087	271	1096	1150	429	0	238	194	0	203
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.17	0.17	0.17	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.7	20.6	8.1	27.7	30.6	30.6	59.9	0.0	70.5	59.1	0.0	61.7
Incr Delay (d2), s/veh	28.3	2.0	0.0	1.1	50.6	52.2	1.0	0.0	25.1	12.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	22.6	0.5	3.2	54.6	57.8	2.5	0.0	6.9	5.5	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.0	22.6	8.1	28.8	81.2	82.9	60.8	0.0	95.6	71.3	0.0	62.3
LnGrp LOS	F	C	A	C	F	F	E	A	F	E	A	E
Approach Vol, veh/h		1932			2625			207			157	
Approach Delay, s/veh		26.6			79.3			84.3			69.9	
Approach LOS		C			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	104.7	17.0	22.6	12.2	108.1	13.1	26.5
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	13.5	88.0	11.5	24.0	13.5	88.0	21.5	14.0
Max Q Clear Time (g_c+I1), s	10.0	100.7	12.6	15.9	6.5	58.3	7.3	4.1
Green Ext Time (p_c), s	0.1	0.0	0.0	0.7	0.3	24.8	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	58.6
HCM 6th LOS	E

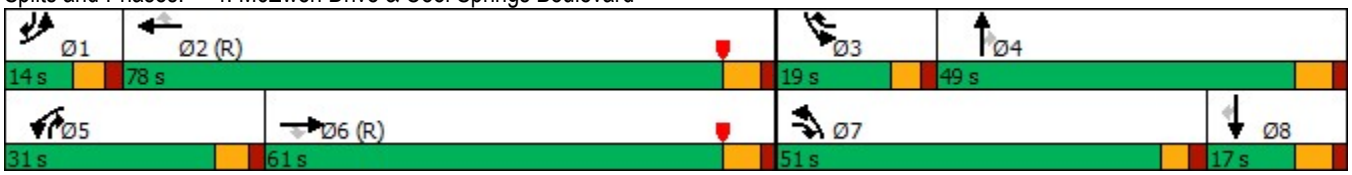
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1210	783	297	1341	65	1032	51	205	62	47	42
Future Volume (vph)	39	1210	783	297	1341	65	1032	51	205	62	47	42
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	3	7	4	5	3	8	1
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	61.0	51.0	31.0	78.0	19.0	51.0	49.0	31.0	19.0	17.0	14.0
Total Split (%)	8.8%	38.1%	31.9%	19.4%	48.8%	11.9%	31.9%	30.6%	19.4%	11.9%	10.6%	8.8%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	5.5	5.5	6.5	6.0	5.5	6.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	7.8	54.5	106.5	28.5	77.7	104.8	45.5	36.4	68.0	19.5	10.3	21.3
Actuated g/C Ratio	0.05	0.34	0.67	0.18	0.49	0.66	0.28	0.23	0.42	0.12	0.06	0.13
v/c Ratio	0.49	1.09	0.76	1.03	0.85	0.07	1.15	0.13	0.31	0.31	0.42	0.14
Control Delay	99.8	85.9	12.6	120.1	43.6	1.0	129.3	46.3	18.4	73.1	83.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.8	85.9	12.6	120.1	43.6	1.0	129.3	46.3	18.4	73.1	83.2	0.9
LOS	F	F	B	F	D	A	F	D	B	E	F	A
Approach Delay		57.9			55.3			108.3			56.0	
Approach LOS		E			E			F			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 69.6	Intersection LOS: E
Intersection Capacity Utilization 101.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	61.0	51.0	31.0	78.0	19.0	51.0	49.0	31.0	19.0	17.0	14.0
Total Split (%)	8.8%	38.1%	31.9%	19.4%	48.8%	11.9%	31.9%	30.6%	19.4%	11.9%	10.6%	8.8%
Maximum Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.3	45.5	42.7	25.0	13.3	10.5	8.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Max	Max
30th %ile Green (s)	8.3	54.5	45.5	25.3	71.5	11.6	45.5	44.1	25.3	11.6	10.2	8.3
30th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Gap	Max
10th %ile Green (s)	0.0	54.5	45.5	42.0	102.5	45.5	45.5	0.0	42.0	45.5	0.0	0.0
10th %ile Term Code	Skip	Coord	Max	Max	Coord	Hold	Max	Skip	Max	Hold	Skip	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1210	783	297	1341	65	1032	51	205	62	47	42
Future Volume (veh/h)	39	1210	783	297	1341	65	1032	51	205	62	47	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	1315	851	323	1458	71	1122	55	223	67	51	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1222	996	278	1664	818	983	559	722	85	117	149
Arrive On Green	0.03	0.34	0.34	0.16	0.47	0.47	0.28	0.30	0.30	0.05	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	1315	851	323	1458	71	1122	55	223	67	51	46
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	55.0	55.0	25.0	59.2	3.6	45.5	3.4	14.3	6.0	4.2	4.3
Cycle Q Clear(g_c), s	3.7	55.0	55.0	25.0	59.2	3.6	45.5	3.4	14.3	6.0	4.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1222	996	278	1664	818	983	559	722	85	117	149
V/C Ratio(X)	0.74	1.08	0.85	1.16	0.88	0.09	1.14	0.10	0.31	0.79	0.44	0.31
Avail Cap(c_a), veh/h	89	1222	996	278	1664	818	983	559	722	150	123	154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.43	0.43	0.43	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.8	52.5	23.9	67.5	38.4	19.6	57.3	40.5	27.6	75.4	72.3	67.6
Incr Delay (d2), s/veh	11.2	41.8	4.3	104.5	6.8	0.2	76.1	0.2	0.5	27.8	5.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	31.1	26.2	19.3	26.7	1.4	30.2	1.6	5.6	3.4	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.0	94.3	28.2	172.0	45.2	19.8	133.4	40.7	28.1	103.2	77.7	70.1
LnGrp LOS	F	F	C	F	D	B	F	D	C	F	E	E
Approach Vol, veh/h		2208			1852			1400			164	
Approach Delay, s/veh		68.7			66.3			113.0			86.0	
Approach LOS		E			E			F			F	

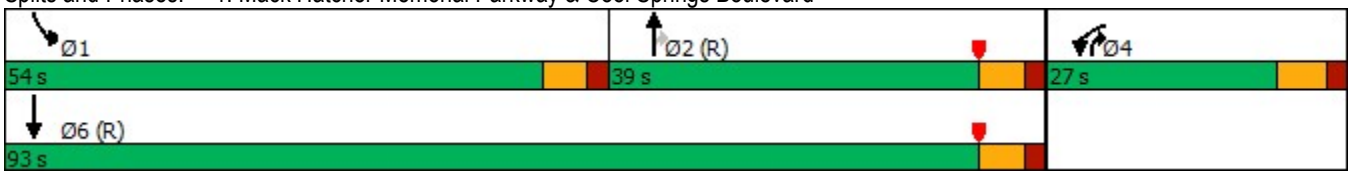
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	81.4	13.2	54.3	31.0	61.5	51.0	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	71.5	13.5	42.5	25.0	54.5	45.5	10.5
Max Q Clear Time (g_c+I1), s	5.7	61.2	8.0	16.3	27.0	57.0	47.5	6.3
Green Ext Time (p_c), s	0.0	8.8	0.1	2.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	79.4
HCM 6th LOS	E

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	307	1023	554	701	1347	563
Future Volume (vph)	307	1023	554	701	1347	563
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	20.5	120.0	33.0	53.0	48.0	87.0
Actuated g/C Ratio	0.17	1.00	0.28	0.44	0.40	0.72
v/c Ratio	0.57	0.69	0.59	1.05	1.02	0.23
Control Delay	35.2	13.4	40.7	76.3	65.9	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	13.4	40.7	76.3	65.9	5.7
LOS	D	B	D	E	E	A
Approach Delay	18.4		60.6			48.2
Approach LOS	B		E			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 42.8	Intersection LOS: D
Intersection Capacity Utilization 92.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	27.0		39.0	27.0	54.0	93.0
Total Split (%)	22.5%		32.5%	22.5%	45.0%	77.5%
Maximum Green (s)	20.5		33.0	20.5	48.0	87.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	20.5		33.0	20.5	48.0	87.0
10th %ile Term Code	Max		Coord	Max	Max	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	307	1023	554	701	1347	563
Future Volume (veh/h)	307	1023	554	701	1347	563
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1796	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	320	0	577	730	1403	586
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	3	2	2	2	2
Cap, veh/h	498		1051	706	1382	2650
Arrive On Green	0.15	0.00	0.30	0.30	0.40	0.75
Sat Flow, veh/h	3319	1572	3647	1582	3456	3647
Grp Volume(v), veh/h	320	0	577	730	1403	586
Grp Sat Flow(s),veh/h/ln	1659	1572	1777	1582	1728	1777
Q Serve(g_s), s	10.9	0.0	16.4	35.5	48.0	6.0
Cycle Q Clear(g_c), s	10.9	0.0	16.4	35.5	48.0	6.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	498		1051	706	1382	2650
V/C Ratio(X)	0.64		0.55	1.03	1.01	0.22
Avail Cap(c_a), veh/h	567		1051	706	1382	2650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	35.5	28.3	36.0	4.6
Incr Delay (d2), s/veh	3.4	0.0	2.1	43.0	28.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	7.1	29.4	24.3	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	51.4	0.0	37.6	71.2	64.0	4.8
LnGrp LOS	D		D	F	F	A
Approach Vol, veh/h	320		1307			1989
Approach Delay, s/veh	51.4		56.4			46.6
Approach LOS	D		E			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	54.0	41.5		24.5		95.5
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	48.0	33.0		20.5		87.0
Max Q Clear Time (g_c+I1), s	50.0	37.5		12.9		8.0
Green Ext Time (p_c), s	0.0	0.0		1.3		8.7

Intersection Summary	
HCM 6th Ctrl Delay	50.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2009	6	15	1235	127	0	0	6	0	0	88
Future Vol, veh/h	0	2009	6	15	1235	127	0	0	6	0	0	88
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2115	6	16	1300	134	0	0	6	0	0	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2121	0	0	-	-	1061	-	-	650
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	254	-	-	0	0	220	0	0	412
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	254	-	-	-	-	220	-	-	412
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

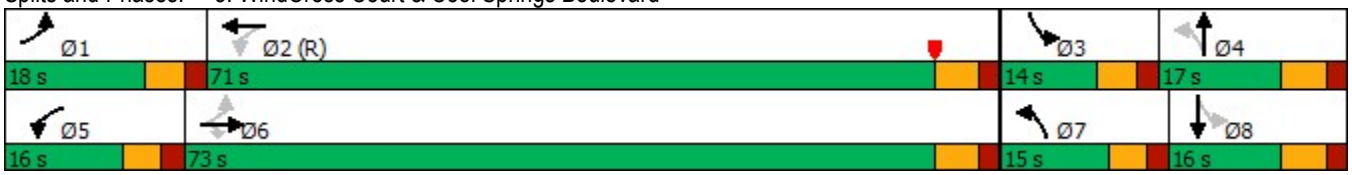
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	21.8	16.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	220	-	-	254	-	-	412
HCM Lane V/C Ratio	0.029	-	-	0.062	-	-	0.225
HCM Control Delay (s)	21.8	-	-	20.1	-	-	16.3
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	-	0.9

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	118	1802	101	225	1342	25	0	120	0
Future Volume (vph)	118	1802	101	225	1342	25	0	120	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	6	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	77.4	67.0	67.0	79.8	68.2	20.7	10.4	19.1	15.6
Actuated g/C Ratio	0.64	0.56	0.56	0.66	0.57	0.17	0.09	0.16	0.13
v/c Ratio	0.56	0.99	0.12	1.07	0.74	0.10	0.35	0.55	0.03
Control Delay	14.1	41.0	3.6	111.4	22.6	39.2	3.5	54.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	41.0	3.6	111.4	22.6	39.2	3.5	54.1	0.2
LOS	B	D	A	F	C	D	A	D	A
Approach Delay		37.6			35.2		10.8		48.9
Approach LOS		D			D		B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 36.2	Intersection LOS: D
Intersection Capacity Utilization 90.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6		5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	20.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	26.0	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	18.0	73.0	73.0	16.0	71.0	15.0	17.0	14.0	16.0
Total Split (%)	15.0%	60.8%	60.8%	13.3%	59.2%	12.5%	14.2%	11.7%	13.3%
Maximum Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	12.5	67.0	67.0	10.5	65.0	9.5	11.0	8.5	10.0
90th %ile Term Code	Max	Coord	Coord	Max	Coord	Max	Hold	Max	Max
70th %ile Green (s)	11.7	67.0	67.0	10.5	65.8	9.5	11.0	8.5	10.0
70th %ile Term Code	Gap	Coord	Coord	Max	Coord	Max	Hold	Max	Max
50th %ile Green (s)	9.5	67.0	67.0	11.5	69.0	24.5	10.0	8.5	0.0
50th %ile Term Code	Gap	Coord	Coord	Max	Coord	Hold	Min	Max	Skip
30th %ile Green (s)	8.5	67.0	67.0	11.5	70.0	0.0	10.0	8.5	24.0
30th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold
10th %ile Green (s)	7.5	67.0	67.0	11.5	71.0	0.0	10.0	8.5	24.0
10th %ile Term Code	Gap	Coord	Coord	Max	Coord	Skip	Min	Max	Hold

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	1802	101	225	1342	26	25	0	96	120	0	13
Future Volume (veh/h)	118	1802	101	225	1342	26	25	0	96	120	0	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1959	110	245	1459	28	27	0	104	130	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	2016	899	223	2160	41	246	0	131	210	0	181
Arrive On Green	0.05	0.57	0.57	0.09	0.61	0.61	0.04	0.00	0.08	0.07	0.00	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3567	68	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	128	1959	110	245	726	761	27	0	104	130	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1858	1781	0	1585	1781	0	1585
Q Serve(g_s), s	3.6	63.8	3.9	10.5	32.7	32.8	1.6	0.0	7.7	8.0	0.0	0.9
Cycle Q Clear(g_c), s	3.6	63.8	3.9	10.5	32.7	32.8	1.6	0.0	7.7	8.0	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	2016	899	223	1076	1125	246	0	131	210	0	181
V/C Ratio(X)	0.48	0.97	0.12	1.10	0.67	0.68	0.11	0.00	0.79	0.62	0.00	0.08
Avail Cap(c_a), veh/h	363	2016	899	223	1076	1125	317	0	145	210	0	181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	25.0	12.1	40.9	15.8	15.8	46.9	0.0	54.0	46.4	0.0	47.5
Incr Delay (d2), s/veh	1.9	14.1	0.1	79.4	2.4	2.3	0.4	0.0	28.2	7.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	28.2	1.4	11.5	12.8	13.4	0.8	0.0	4.1	4.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	39.1	12.2	120.3	18.2	18.1	47.4	0.0	82.2	54.4	0.0	47.9
LnGrp LOS	B	D	B	F	B	B	D	A	F	D	A	D
Approach Vol, veh/h		2197			1732			131			144	
Approach Delay, s/veh		36.5			32.6			75.0			53.7	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	78.7	14.0	15.9	16.0	74.1	10.2	19.7
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	65.0	8.5	11.0	10.5	67.0	9.5	10.0
Max Q Clear Time (g_c+I1), s	5.6	34.8	10.0	9.7	12.5	65.8	3.6	2.9
Green Ext Time (p_c), s	0.2	21.5	0.0	0.1	0.0	1.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	36.7
HCM 6th LOS	D

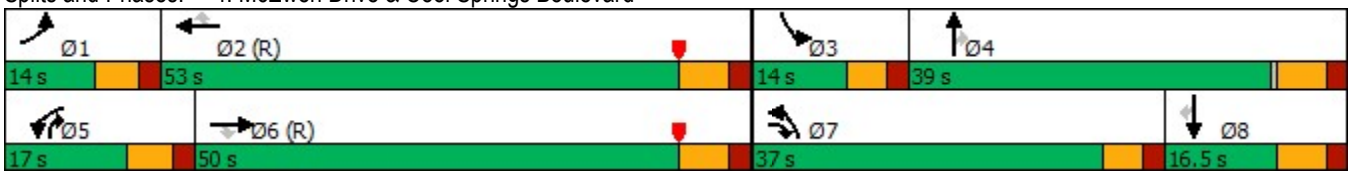
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1131	874	107	988	43	571	34	256	58	45	35
Future Volume (vph)	26	1131	874	107	988	43	571	34	256	58	45	35
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	2	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	6.5	5.5	6.5	6.0	5.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	7.6	47.6	85.1	10.7	56.0	56.0	30.9	27.3	41.3	16.3	10.0	10.0
Actuated g/C Ratio	0.06	0.40	0.71	0.09	0.46	0.46	0.26	0.23	0.34	0.14	0.08	0.08
v/c Ratio	0.25	0.88	0.77	0.74	0.65	0.06	0.71	0.09	0.47	0.26	0.32	0.13
Control Delay	59.4	43.6	12.6	80.4	29.8	0.1	45.6	35.2	23.4	53.5	58.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	43.6	12.6	80.4	29.8	0.1	45.6	35.2	23.4	53.5	58.0	0.9
LOS	E	D	B	F	C	A	D	D	C	D	E	A
Approach Delay		30.5			33.5			38.6			41.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 120.5	
Actuated Cycle Length: 120.5	
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 33.3	Intersection LOS: C
Intersection Capacity Utilization 83.4%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2		7	4	5	3	8	
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	20.0	8.0	10.0	6.0	8.0	10.0	10.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	26.5	13.5	16.5	12.0	13.5	16.5	16.5
Total Split (s)	14.0	50.0	37.0	17.0	53.0	53.0	37.0	39.0	17.0	14.0	16.5	16.5
Total Split (%)	11.6%	41.5%	30.7%	14.1%	44.0%	44.0%	30.7%	32.4%	14.1%	11.6%	13.7%	13.7%
Maximum Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	32.5	11.0	8.5	10.0	10.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	4.5	3.5	4.5	4.0	3.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	43.5	31.5	11.0	46.5	46.5	31.5	33.0	11.0	8.5	10.0	10.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Coord	Max	Hold	Max	Max	Max	Max
30th %ile Green (s)	0.0	43.5	31.5	11.0	60.5	60.5	31.5	0.0	11.0	48.0	10.0	10.0
30th %ile Term Code	Skip	Coord	Max	Max	Coord	Coord	Max	Skip	Max	Hold	Max	Max
10th %ile Green (s)	0.0	64.2	28.6	9.7	79.9	79.9	28.6	27.6	9.7	0.0	0.0	0.0
10th %ile Term Code	Skip	Coord	Gap	Gap	Coord	Coord	Gap	Hold	Gap	Skip	Skip	Skip

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 120.5
Offset: 119.5 (99%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1131	874	107	988	43	571	34	256	58	45	35
Future Volume (veh/h)	26	1131	874	107	988	43	571	34	256	58	45	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1229	950	116	1074	47	621	37	278	63	49	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1485	1003	142	1660	740	744	449	506	104	156	132
Arrive On Green	0.03	0.42	0.42	0.08	0.47	0.47	0.22	0.24	0.24	0.06	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	28	1229	950	116	1074	47	621	37	278	63	49	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	36.9	50.1	7.7	27.7	2.0	20.6	1.8	17.4	4.1	3.0	2.7
Cycle Q Clear(g_c), s	1.9	36.9	50.1	7.7	27.7	2.0	20.6	1.8	17.4	4.1	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1485	1003	142	1660	740	744	449	506	104	156	132
V/C Ratio(X)	0.52	0.83	0.95	0.82	0.65	0.06	0.84	0.08	0.55	0.60	0.31	0.29
Avail Cap(c_a), veh/h	119	1485	1003	163	1660	740	907	507	555	126	156	132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.17	0.17	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	31.1	20.2	54.4	24.4	17.6	45.1	35.4	33.7	55.1	51.8	51.7
Incr Delay (d2), s/veh	1.9	1.0	4.6	26.1	2.0	0.2	7.4	0.2	2.0	11.5	2.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	15.3	23.4	4.4	11.6	0.8	9.6	0.9	6.9	2.2	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.2	32.1	24.7	80.5	26.4	17.7	52.4	35.5	35.7	66.6	54.2	54.2
LnGrp LOS	E	C	C	F	C	B	D	D	D	E	D	D
Approach Vol, veh/h		2207			1237			936			150	
Approach Delay, s/veh		29.2			31.1			46.8			59.4	
Approach LOS		C			C			D			E	

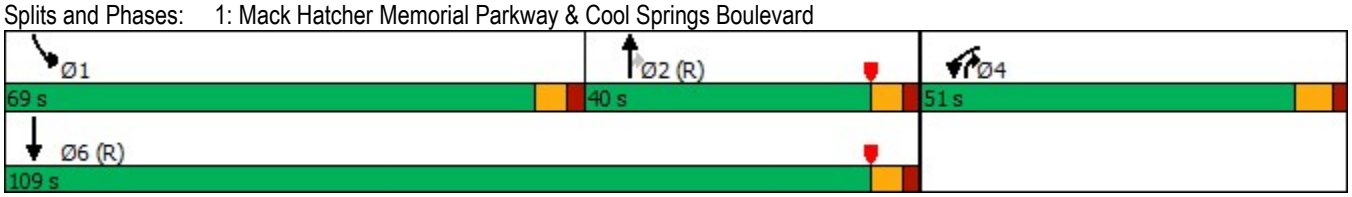
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	62.5	12.5	35.3	15.5	56.6	31.3	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	46.5	8.5	32.5	11.0	43.5	31.5	10.0
Max Q Clear Time (g_c+I1), s	3.9	29.7	6.1	19.4	9.7	52.1	22.6	5.0
Green Ext Time (p_c), s	0.0	10.8	0.0	2.0	0.0	0.0	3.2	0.2

Intersection Summary	
HCM 6th Ctrl Delay	34.4
HCM 6th LOS	C

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	791	1688	601	566	1155	565
Future Volume (vph)	791	1688	601	566	1155	565
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Detector Phase	4		2	4	1	6
Switch Phase						
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5		6.0	6.5	6.0	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Max	None	None	C-Max
Act Effct Green (s)	44.2	160.0	34.3	84.5	63.0	103.3
Actuated g/C Ratio	0.28	1.00	0.21	0.53	0.39	0.65
v/c Ratio	0.89	1.13	0.84	0.71	0.91	0.26
Control Delay	57.4	90.5	71.5	33.7	56.6	12.5
Queue Delay	0.0	0.0	0.0	1.8	0.0	0.0
Total Delay	57.4	90.5	71.5	35.5	56.6	12.5
LOS	E	F	E	D	E	B
Approach Delay	79.9		54.0			42.1
Approach LOS	E		D			D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 62.2	Intersection LOS: E
Intersection Capacity Utilization 87.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Mack Hatcher Memorial Parkway & Cool Springs Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2	4	1	6
Permitted Phases		Free		2		
Minimum Initial (s)	18.0		18.0	18.0	8.0	10.0
Minimum Split (s)	24.5		24.0	24.5	14.0	16.0
Total Split (s)	51.0		40.0	51.0	69.0	109.0
Total Split (%)	31.9%		25.0%	31.9%	43.1%	68.1%
Maximum Green (s)	44.5		34.0	44.5	63.0	103.0
Yellow Time (s)	4.5		4.0	4.5	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	5.0		7.0	5.0	7.0	5.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		C-Max	None	None	C-Max
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
90th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
90th %ile Term Code	Max		Coord	Max	Max	Coord
70th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
70th %ile Term Code	Max		Coord	Max	Max	Coord
50th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
50th %ile Term Code	Max		Coord	Max	Max	Coord
30th %ile Green (s)	44.5		34.0	44.5	63.0	103.0
30th %ile Term Code	Max		Coord	Max	Max	Coord
10th %ile Green (s)	43.1		35.4	43.1	63.0	104.4
10th %ile Term Code	Gap		Coord	Gap	Max	Coord

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	791	1688	601	566	1155	565
Future Volume (veh/h)	791	1688	601	566	1155	565
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	841	0	639	602	1229	601
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	915		825	788	1338	2335
Arrive On Green	0.26	0.00	0.23	0.23	0.39	0.66
Sat Flow, veh/h	3456	1585	3647	1585	3456	3647
Grp Volume(v), veh/h	841	0	639	602	1229	601
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1728	1777
Q Serve(g_s), s	37.8	0.0	26.9	37.2	54.1	11.2
Cycle Q Clear(g_c), s	37.8	0.0	26.9	37.2	54.1	11.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	915		825	788	1338	2335
V/C Ratio(X)	0.92		0.77	0.76	0.92	0.26
Avail Cap(c_a), veh/h	961		825	788	1361	2335
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	0.0	57.5	29.6	46.6	11.3
Incr Delay (d2), s/veh	13.9	0.0	7.0	6.9	11.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.1	0.0	12.7	26.1	24.7	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	71.1	0.0	64.5	36.5	58.2	11.6
LnGrp LOS	E		E	D	E	B
Approach Vol, veh/h	841		1241			1830
Approach Delay, s/veh	71.1		50.9			42.9
Approach LOS	E		D			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	67.9	43.2		48.9		111.1
Change Period (Y+Rc), s	6.0	6.0		6.5		6.0
Max Green Setting (Gmax), s	63.0	34.0		44.5		103.0
Max Q Clear Time (g_c+I1), s	56.1	39.2		39.8		13.2
Green Ext Time (p_c), s	5.8	0.0		2.6		9.0

Intersection Summary	
HCM 6th Ctrl Delay	51.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1730	6	11	2284	126	0	0	21	0	0	132
Future Vol, veh/h	0	1730	6	11	2284	126	0	0	21	0	0	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	335	-	130	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1821	6	12	2404	133	0	0	22	0	0	139

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1827	0	0	-	-	914	-	-	1202
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	331	-	-	0	0	276	0	0	177
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	331	-	-	-	-	276	-	-	177
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

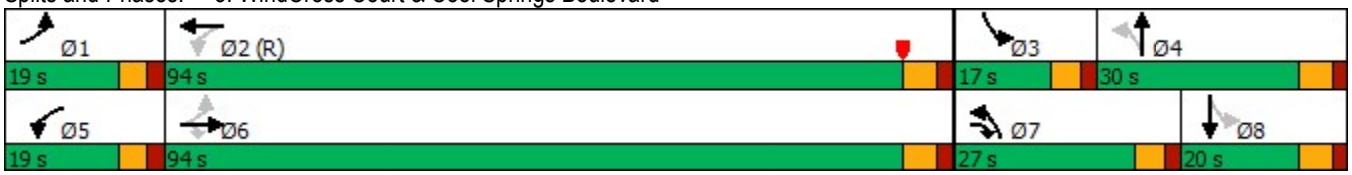
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	19.2	74.6
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	276	-	-	331	-	-	177
HCM Lane V/C Ratio	0.08	-	-	0.035	-	-	0.785
HCM Control Delay (s)	19.2	-	-	16.3	-	-	74.6
HCM Lane LOS	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	-	5.2

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	148	1613	40	124	2322	62	0	158	0
Future Volume (vph)	148	1613	40	124	2322	62	0	158	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Detector Phase	1	6	7	5	2	7	4	3	8
Switch Phase									
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	19.0	94.0	27.0	19.0	94.0	27.0	30.0	17.0	20.0
Total Split (%)	11.9%	58.8%	16.9%	11.9%	58.8%	16.9%	18.8%	10.6%	12.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	6.0	5.5	5.5	6.0	5.5	6.0	5.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Act Effct Green (s)	106.7	92.8	120.3	104.4	91.7	36.0	20.4	24.7	16.9
Actuated g/C Ratio	0.67	0.58	0.75	0.65	0.57	0.22	0.13	0.15	0.11
v/c Ratio	0.83	0.85	0.04	0.74	1.26	0.21	0.87	0.99	0.07
Control Delay	52.3	53.3	4.8	36.5	150.2	48.7	56.3	123.4	0.4
Queue Delay	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	55.5	4.8	36.5	150.2	48.7	56.3	123.4	0.4
LOS	D	E	A	D	F	D	E	F	A
Approach Delay		54.1			144.4		54.9		108.3
Approach LOS		D			F		D		F

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.26	
Intersection Signal Delay: 102.9	Intersection LOS: F
Intersection Capacity Utilization 117.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: WindCross Court & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	1	6	7	5	2	7	4	3	8
Permitted Phases	6		6	2		4		8	
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	10.0	8.0	10.0
Minimum Split (s)	11.5	26.0	13.5	11.5	26.0	13.5	16.0	13.5	16.0
Total Split (s)	19.0	94.0	27.0	19.0	94.0	27.0	30.0	17.0	20.0
Total Split (%)	11.9%	58.8%	16.9%	11.9%	58.8%	16.9%	18.8%	10.6%	12.5%
Maximum Green (s)	13.5	88.0	21.5	13.5	88.0	21.5	24.0	11.5	14.0
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	None	None	None	None
Walk Time (s)									
Flash Dont Walk (s)									
Pedestrian Calls (#/hr)									
90th %ile Green (s)	13.5	88.0	15.8	13.5	88.0	15.8	24.0	11.5	19.7
90th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
70th %ile Green (s)	13.5	88.0	13.6	13.5	88.0	13.6	24.0	11.5	21.9
70th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Max	Max	Hold
50th %ile Green (s)	14.2	88.0	12.1	14.2	88.0	12.1	23.3	11.5	22.7
50th %ile Term Code	Max	Coord	Gap	Max	Coord	Gap	Gap	Max	Hold
30th %ile Green (s)	14.8	95.0	36.3	11.7	91.9	36.3	18.8	11.5	0.0
30th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip
10th %ile Green (s)	10.9	105.2	29.6	8.2	102.5	29.6	12.1	11.5	0.0
10th %ile Term Code	Gap	Coord	Hold	Gap	Coord	Hold	Gap	Max	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	1613	40	124	2322	24	62	0	268	158	0	22
Future Volume (veh/h)	148	1613	40	124	2322	24	62	0	268	158	0	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	1753	43	135	2524	26	67	0	149	172	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	2244	1076	194	2155	22	281	0	174	194	0	212
Arrive On Green	0.08	0.63	0.63	0.04	0.60	0.60	0.05	0.00	0.11	0.07	0.00	0.13
Sat Flow, veh/h	1781	3554	1585	1781	3603	37	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	161	1753	43	135	1242	1308	67	0	149	172	0	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1864	1781	0	1585	1781	0	1585
Q Serve(g_s), s	10.2	57.4	1.4	4.7	95.7	95.7	5.3	0.0	14.8	11.5	0.0	2.1
Cycle Q Clear(g_c), s	10.2	57.4	1.4	4.7	95.7	95.7	5.3	0.0	14.8	11.5	0.0	2.1
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	182	2244	1076	194	1063	1115	281	0	174	194	0	212
V/C Ratio(X)	0.88	0.78	0.04	0.70	1.17	1.17	0.24	0.00	0.86	0.89	0.00	0.11
Avail Cap(c_a), veh/h	195	2244	1076	267	1063	1115	436	0	238	194	0	212
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.13	0.13	0.13	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	21.4	8.5	28.2	32.2	32.2	59.1	0.0	70.0	62.2	0.0	60.9
Incr Delay (d2), s/veh	34.6	2.1	0.0	0.9	77.6	79.4	0.9	0.0	26.6	36.8	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	23.2	0.5	3.1	61.4	64.9	2.5	0.0	7.3	3.4	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.0	23.6	8.5	29.0	109.8	111.5	60.0	0.0	96.6	99.0	0.0	61.4
LnGrp LOS	F	C	A	C	F	F	E	A	F	F	A	E
Approach Vol, veh/h		1957			2685			216			196	
Approach Delay, s/veh		28.9			106.6			85.3			94.4	
Approach LOS		C			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.8	101.7	17.0	23.5	12.4	107.0	13.1	27.4
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	13.5	88.0	11.5	24.0	13.5	88.0	21.5	14.0
Max Q Clear Time (g_c+I1), s	12.2	97.7	13.5	16.8	6.7	59.4	7.3	4.1
Green Ext Time (p_c), s	0.1	0.0	0.0	0.7	0.3	24.0	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	75.1
HCM 6th LOS	E

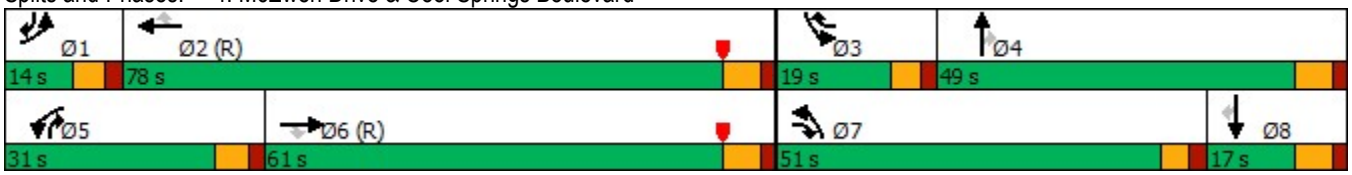
Notes

User approved ignoring U-Turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1236	793	297	1380	65	1048	51	205	62	47	42
Future Volume (vph)	39	1236	793	297	1380	65	1048	51	205	62	47	42
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Detector Phase	1	6	7	5	2	3	7	4	5	3	8	1
Switch Phase												
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	61.0	51.0	31.0	78.0	19.0	51.0	49.0	31.0	19.0	17.0	14.0
Total Split (%)	8.8%	38.1%	31.9%	19.4%	48.8%	11.9%	31.9%	30.6%	19.4%	11.9%	10.6%	8.8%
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.5	5.5	6.0	6.5	5.5	5.5	6.5	6.0	5.5	6.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	7.8	54.5	106.5	28.5	77.7	104.8	45.5	36.4	68.0	19.5	10.3	21.3
Actuated g/C Ratio	0.05	0.34	0.67	0.18	0.49	0.66	0.28	0.23	0.42	0.12	0.06	0.13
v/c Ratio	0.49	1.11	0.77	1.03	0.87	0.07	1.17	0.13	0.31	0.31	0.42	0.14
Control Delay	98.3	95.0	12.8	120.1	45.3	1.0	135.6	46.3	18.6	73.1	83.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.3	95.0	12.8	120.1	45.3	1.0	135.6	46.3	18.6	73.1	83.2	0.9
LOS	F	F	B	F	D	A	F	D	B	E	F	A
Approach Delay		63.5			56.4			113.7			56.0	
Approach LOS		E			E			F			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 73.4	Intersection LOS: E
Intersection Capacity Utilization 103.0%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 4: McEwen Drive & Cool Springs Boulevard



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	1
Permitted Phases			6			2			4			8
Minimum Initial (s)	6.0	20.0	8.0	6.0	20.0	8.0	8.0	10.0	6.0	8.0	10.0	6.0
Minimum Split (s)	12.0	26.5	13.5	12.0	26.5	13.5	13.5	16.5	12.0	13.5	16.5	12.0
Total Split (s)	14.0	61.0	51.0	31.0	78.0	19.0	51.0	49.0	31.0	19.0	17.0	14.0
Total Split (%)	8.8%	38.1%	31.9%	19.4%	48.8%	11.9%	31.9%	30.6%	19.4%	11.9%	10.6%	8.8%
Maximum Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
Yellow Time (s)	4.0	4.5	3.5	4.0	4.5	3.5	3.5	4.5	4.0	3.5	4.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
90th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
90th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
70th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.5	45.5	42.5	25.0	13.5	10.5	8.0
70th %ile Term Code	Max	Coord	Max	Max	Coord	Max	Max	Hold	Max	Max	Max	Max
50th %ile Green (s)	8.0	54.5	45.5	25.0	71.5	13.3	45.5	42.7	25.0	13.3	10.5	8.0
50th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Max	Max
30th %ile Green (s)	8.3	54.5	45.5	25.3	71.5	11.6	45.5	44.1	25.3	11.6	10.2	8.3
30th %ile Term Code	Max	Coord	Max	Max	Coord	Gap	Max	Hold	Max	Gap	Gap	Max
10th %ile Green (s)	0.0	54.5	45.5	42.0	102.5	45.5	45.5	0.0	42.0	45.5	0.0	0.0
10th %ile Term Code	Skip	Coord	Max	Max	Coord	Hold	Max	Skip	Max	Hold	Skip	Skip

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 159.5 (100%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1236	793	297	1380	65	1048	51	205	62	47	42
Future Volume (veh/h)	39	1236	793	297	1380	65	1048	51	205	62	47	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	1343	862	323	1500	71	1139	55	223	67	51	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1222	996	278	1664	818	983	559	722	85	117	149
Arrive On Green	0.03	0.34	0.34	0.16	0.47	0.47	0.28	0.30	0.30	0.05	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	1343	862	323	1500	71	1139	55	223	67	51	46
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	55.0	55.0	25.0	62.1	3.6	45.5	3.4	14.3	6.0	4.2	4.3
Cycle Q Clear(g_c), s	3.7	55.0	55.0	25.0	62.1	3.6	45.5	3.4	14.3	6.0	4.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1222	996	278	1664	818	983	559	722	85	117	149
V/C Ratio(X)	0.74	1.10	0.87	1.16	0.90	0.09	1.16	0.10	0.31	0.79	0.44	0.31
Avail Cap(c_a), veh/h	89	1222	996	278	1664	818	983	559	722	150	123	154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.38	0.38	0.38	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.8	52.5	24.3	67.5	39.1	19.6	57.3	40.5	27.6	75.4	72.3	67.6
Incr Delay (d2), s/veh	10.0	50.2	4.1	104.5	8.3	0.2	83.1	0.2	0.5	27.8	5.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	32.5	26.9	19.3	28.3	1.4	31.2	1.6	5.6	3.4	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.8	102.7	28.4	172.0	47.5	19.8	140.3	40.7	28.1	103.2	77.7	70.1
LnGrp LOS	F	F	C	F	D	B	F	D	C	F	E	E
Approach Vol, veh/h		2247			1894			1417			164	
Approach Delay, s/veh		73.9			67.7			118.8			86.0	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	81.4	13.2	54.3	31.0	61.5	51.0	16.5
Change Period (Y+Rc), s	6.0	6.5	5.5	6.5	6.0	6.5	5.5	6.5
Max Green Setting (Gmax), s	8.0	71.5	13.5	42.5	25.0	54.5	45.5	10.5
Max Q Clear Time (g_c+I1), s	5.7	64.1	8.0	16.3	27.0	57.0	47.5	6.3
Green Ext Time (p_c), s	0.0	6.6	0.1	2.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	83.3
HCM 6th LOS	F

HISTORIC FRANKLIN TENNESSEE

City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04779

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Amy Diaz-Barriga, Asst Director of Planning Development
Ariella Stanford, Planner

SUBJECT:

Parish Presbyterian Church Subdivision, Final Plat, Creating One Lot, And Dedicating Right-Of-Way And Easements, On 13.81 Acres, Located At 4150 Clovercroft Road. (CONSENT AGENDA)

PURPOSE:

PROJECT INFORMATION
COF Project Number: 8181
Applicant: Clay Wallace, ELI Engineering
Owner: Mike Mastroberti, Parish PCA, Inc.

BACKGROUND/STAFF COMMENTS:
This final plat combines two parcels into one lot, and dedicates right-of-way and easements in the Parish Presbyterian Church Subdivision. The corresponding site plan was approved in August 2021, and both the final plat and the site plan are consistent with the development plan. The creation of a new lot on this final plat requires approval by the Franklin Municipal Planning Commission.

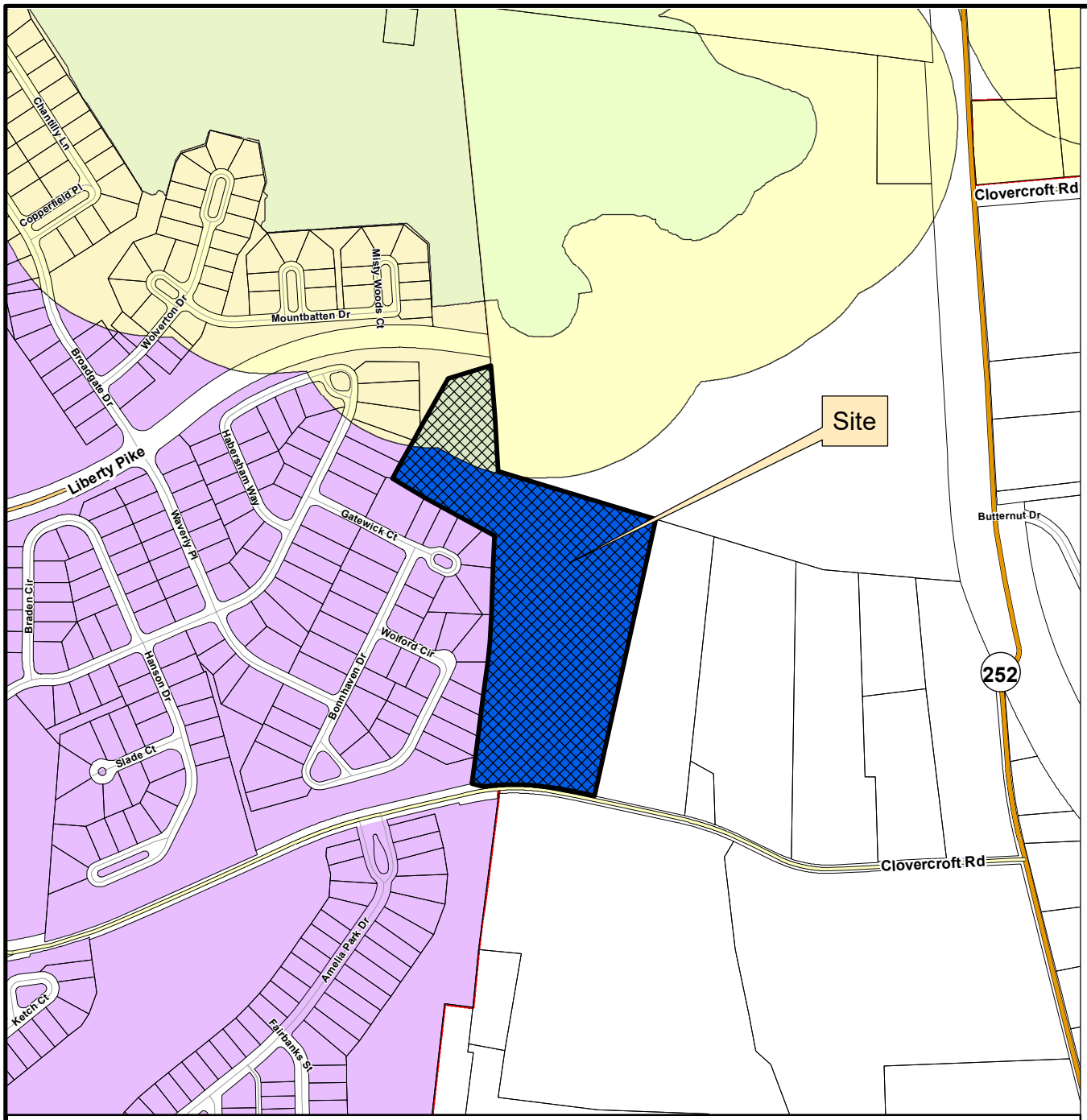
PROCEDURAL REQUIREMENTS:
1. In addition to uploading the corrected plat to the online plan review website (https://franklin.contractorsplanroom.com/secure/), the applicant shall submit the Mylar, to the Department of Building and Neighborhood Services (Suite 110, Franklin City Hall).
2. The mylar shall be 18 inches by 24 inches in size. The Certificates of Approval for the Subdivision Name and Street Names, Water System (if not COF Water), Survey, and Ownership shall be signed when the plat is resubmitted. The Mylar shall be submitted to BNS within five (5) business days of the corrected electronic plat being uploaded to the online plan review website (or vice versa) or the item shall be rejected as incomplete for City review. With the resubmittal, each condition of approval/open issue in the online plan review system shall contain a full response from the applicant as to the satisfaction or completion of that condition.
3. The city's project identification number shall be included on all correspondence with any city department relative to this project.

FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff recommends approval with conditions of Parish Presbyterian Church Subdivision, Final Plat. The conditions of approval are attached.



PARISH PRESBYTERIAN CHURCH SUBDIVISION
FINAL PLAT

Project Information
Existing Zoning: CI Civic and Institutional District
Overlay Districts: 500' Buffer of Hillside Overlay
Site Acreage: 13.84 acres
Total Number of Lots: 1

Legend

- Parish Presbyterian Church Subdivision
- Hillside/Hillcrest Overlay
- 500 Ft Buffer of Hillside
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
- RC12 Regional Commerce 12 District
- GO General Office District
- LI Light Industrial District
- HI Heavy Industrial District

This map was created by the Franklin Planning Department.
It was compiled from the most authentic information available.
The City is not responsible for any errors or omissions contained hereon.
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N

0 250 500 1,000
Feet

HISTORIC FRANKLIN TENNESSEE

COF no: 8181

CONDITIONS OF APPROVAL:

Open Issues: 5 These issues are currently being filtered

Engineering - Final Plat Checklist

General Issues

3. C. Final Plat

lance.fittro@franklintn.gov **Prior to the final plat being circulated for City signatures or any building permit being issued,** the Applicant shall document that sureties have been posted for the infrastructure site plan (COF #6396) and the Clovercroft turn lanes plan (COF #6843).

22. 0. General Information

lance.fittro@franklintn.gov Applicant shall ensure that any modifications to the site plan COF #7606 are reflected on the final plat. The final plat shall match the site plan.

Performance Agreement and Surety

General Issues

21. Engineering Sureties

kevin.long@franklintn.gov Any unposted sureties associated with this development from site plan: **COF #7606 (Parish Presbyterian Church, Site Plan (Multi-Purpose Building))** shall be transferred to this final plat as a condition of approval.

(This comment serves only as a reminder to staff and does not hinder approval. No response is necessary from the applicant beyond "N/A" or "Acknowledged" to satisfy requirements of the IDT system.)

Planning

General Issues

23. Create Lot Number

amy.diaz-barriga@franklintn.gov Applicant shall identify the lot number on the plat, and place lot number within the limits of the lot. As this plat is only creating one lot, it is assumed the lot number would be one (1).

Water/Sewer

General Issues

6. Sanitary sewer

scott.andrews@franklintn.gov Applicant has failed to address the comment.

The applicant shall provide the sanitary sewer main size and service locations as they were installed based on previous plat information.

Site Data

Project Name:	Parish Presbyterian Church, Final Plat
Project #	8181
Address:	4156 Clovercroft Road (Multi-Purpose Building) 4150 Clovercroft Road (Existing Chapel)
Parcel(s)	Map 80, Parcel 11.01
Lots	1
Acreage/Square Footage of Site:	13.84 AC / 602,830.51 SQ.FT.
Vesting (date development first became vested):	August 26, 2021
REGULATIONS	
Base Zoning:	CI, Civic Institutional District
Overlay Zoning:	N/A
Building Types Applied:	Civic Building
Frontage Types Applied:	Landscape Frontage
Setbacks	
Front Yard:	25' (Abutting Local or Collector Street)
Side Yard:	25'
Rear Yard:	25'
Minimum Landscape Surface Area:	40%
Open Space SF Required:	30,142 SF (0.69 AC)
Natural Area SF Required:	N/A
Tree Canopy Retention Acreage:	2.69 AC
Historic Resource Treatment	No

Notes

1. The purpose of this plat is to combine two parcels into one lot, dedicate right-of-way and easements.
2. This property is not located within a flood hazard area as per FEMA FIRM Community Map No. 47187CO220F, dated September 28, 2006.
3. The lot shall be served by water from Milcrofton Utility District and sewer from the City of Franklin. Individual water and/or sanitary sewer service lines are required for each parcel.
4. Parcel ID's shown thus (000) pertain to property map 080.
5. All property corners not designated otherwise shall be marked with 1/2" iron rods x 18" long with plastic caps.
6. Bearings based on Tennessee State Plan Coordinate System, Zone 5301, Fipszone 4100; NAD 83 datum.
7. Within new development and for off-site lines constructed as a result of, or to provide service to, the new development, all utilities, such as cable television, electrical (excluding transformers), gas, sewer, telephone and water lines shall be placed underground.
8. All street light locations and quantities are approximate. Final positioning and quantity shall be at direction of MTEMC.
9. All Milcrofton Utility District (MUD) easements are exclusive easements. No excavation, building, structure, or obstruction of any kind may be constructed or permitted within the easements, except pavement for a driveway that crosses an easement. No trees or shrubbery may be planted within the easements. MUD will have unrestricted access to all of its lines, meters, valves, vaults, and other water system facilities within the easements without seeking any further permission. MUD has the right to disturb or remove any impermissible items within the easements. The property owner will be responsible for repairing or replacing any such items at the property owner's expense.
10. Maintenance of all storm water management features, including lot line swales, shall be the responsibility of the property owner(s) or HOA.
11. No obstructions or encroachments which impede the flow of stormwater shall be permitted within the Public Drainage Easements. The City of Franklin is not responsible for repair or replacement of any encroachments that are damaged or removed in the course of maintenance activities within easements.
12. The City of Franklin Water Management department has unrestricted access to its domestic water, sanitary sewer, reclaim water lines of system improvement located within its exclusive easements within the development. In the event landscaping, fencing, concrete or other structures are installed or placed within a City of Franklin easement, the City of Franklin shall have the right to remove such encroachments within the easement as may be necessary for the City of Franklin to repair, maintain or replace its infrastructure which is now or in the future may by located within the easement without obtaining any further permission from the owner. The property owner shall be responsible for repairing and/or replacing any such landscaping fencing concrete or other structures removed or disturbed by the City of Franklin in common open space lots and in areas owned by the property owner at no expense to the City of Franklin. Owner shall be responsible for structures removed or disturbed by the City of Franklin within an easement on the owners' lot at the owners' expense.
13. Any and all mineral rights for the subject property shall remain with the owner.
14. Green Infrastructure Easements (GIE) are exclusive easements defining areas set aside for the construction, maintenance, repair, monitoring and other activities necessary for the furtherance of water quality features designated as green infrastructure practices by the City of Franklin, and provide public access to such features. Any and all activities, except as specifically permitted by notation on the current plat of record and/or within the recorded Long Term Maintenance Agreement, shall be strictly prohibited without the written consent of the City Engineer or his designee.
15. Trees shall be pruned to a minimum of eight feet above grade and no fences or other obstructions shall be taller than three feet above grade within sight triangles for street intersections and roadway signage per the latest version of AASHTO Policy on Geometric Design of Highways and Streets.
16. Cross Access Easements shall provide perpetual, non-exclusive access for the purposes of vehicular and pedestrian ingress and egress across the Cross Access Easement. Property Owner(s) shall maintain and keep the Cross Access Easement within their development in a commercially reasonable condition and state of repair.
17. Sidewalks and trails outside of public right-of-way shall be Public Access Easements and shall be maintained by the Property Owner(s)
18. All open space shall be Public Utility, Drainage, and Access Easements and shall be maintained by the Property Owner(s).
19. There shall be no mowing, clearing, grading, construction, storage, or disturbance of vegetation in riparian buffers except as permitted by the City Engineer, or his designee.

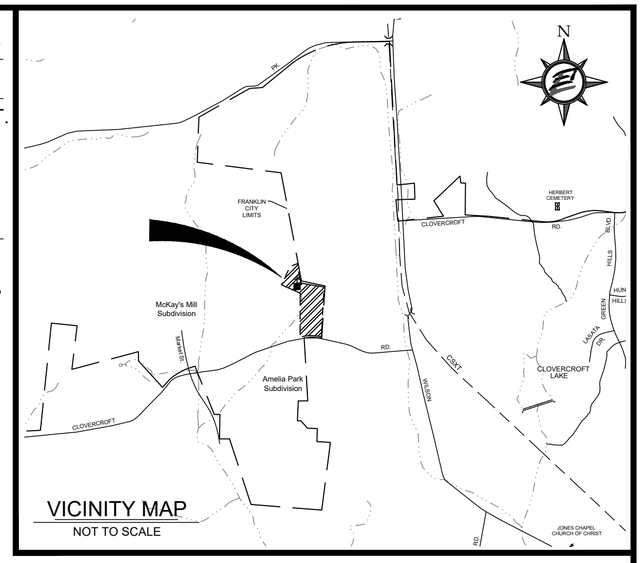
Total area: 602,831 S.F. or 13.84 Acres

Road Data:

Area in ROW dedication	8755 SQ.FT. 0.20 Acres
Linear footage of new roads	0 Feet

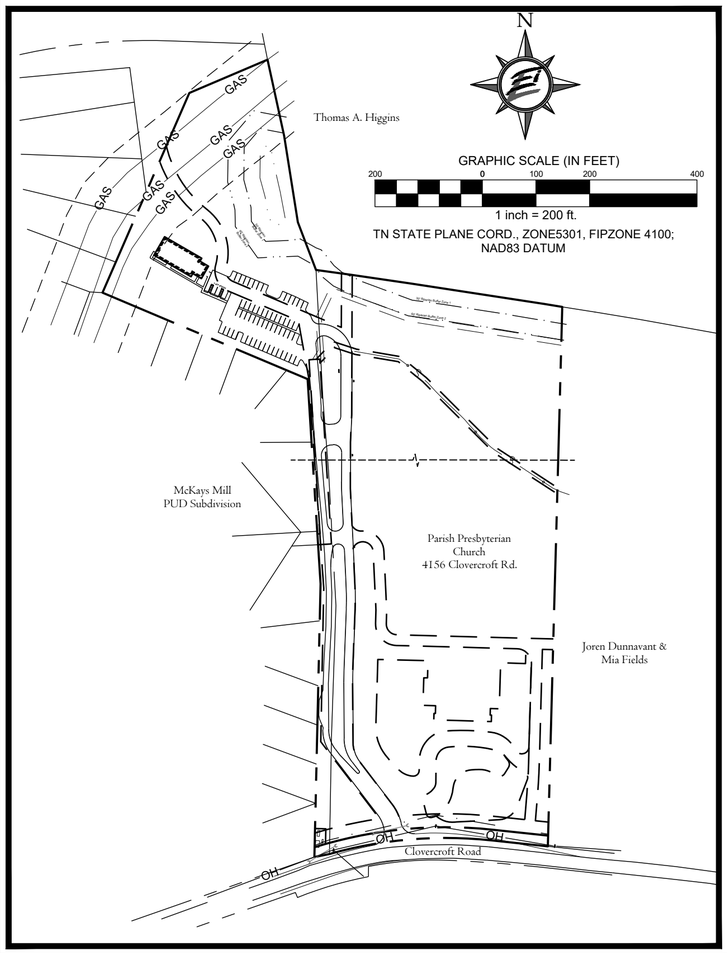
Deed Reference

TAX MAP 80, PARCELS 11.01 & 12.05
Part the same Property conveyed to Parish PCA, Inc. of record in Book 5129, Page 13 and to Parish PCA, Inc. of record in Book 6714, Page 623 both in the Register's Office for Williamson County, Tennessee



VICINITY MAP
NOT TO SCALE

Energy, Land and Infrastructure, LLC (ELI, LLC) has not physically located the underground utilities. Above grade and underground utilities shown were taken from visible appurtenances at the site, public records and/or maps prepared by others. ELI, LLC makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. ELI, LLC further does not warrant that the underground utilities are in the exact location indicated. Therefore, reliance upon the type, size and location of utilities shown should be done so with this circumstance considered. Detailed verification of existence, location and depth should also be made prior to any decision relative thereto is made. Availability and cost of service should be confirmed with the appropriate utility company. In Tennessee, it is a requirement, per "The Underground Utility Damage Prevention Act", that anyone who engages in excavation must notify all known underground utility owner, no less than three (3) nor more than ten (10) working days prior to the date of their intent to excavate and also to avoid any possible hazard or conflict. Tennessee One Call 811.



Certificate Of Ownership

I (we) hereby certify that I am (we are) the owner(s) of the properties shown hereon as of record in Book 5129, Page 13 & Book 6714, Page 623 R.O.W.C., Tennessee and that I (we) hereby adopt this plan of combination of the properties as shown hereon and dedicate all public ways and easements as noted. No lot or lots as shown hereon shall again be subdivided, re-subdivided, altered or changed so as to produce less area than is hereby established until otherwise approved by the Franklin Municipal Planning Commission and under no condition shall such lot or lots be made to produce less area than is prescribed by the restrictive covenants as of record in Book _____ , Page _____ , R.O.W.C., Tennessee, running with the title to the property. I (we) further certify that there are no liens on this property.

Owner _____ Date _____

Owner Information
Parish PCA, Inc.
Mike Mastroberti
4150 Clovercroft Road
Franklin, Tennessee 37064

MTEMC Certificate of Approval for Recording

Middle Tennessee Electric Membership Corporation (MTEMC) will provide electric service to the subject property according to normal operating practices of MTEMC as defined in the rules and regulation, bylaws, policy bulletins and operational bulletins of MTEMC, and in accordance with the plat approval checklist, tree planting guidelines and other regulations contained on the MTEMC website at www.mtemc.com (collectively the "Requirements"). No electric service will be provided until MTEMC's Requirements have been met and approved in writing by an authorized representative of MTEMC. Any approval is, at all times, contingent upon continuing compliance with MTEMC's Requirements.

Middle Tennessee Electric Membership Corporation _____ Date _____

Certificate Of Survey

I hereby certify that the subdivision plat shown hereon is correct and that approved monuments shown hereon will be placed as indicated upon completion of construction. All side lot lines are at right angles or radial to a street unless otherwise noted. I further certify that this plat exceeds the minimum requirements for a Federal Geodetic Control Standards pursuant to Chapter 0820-2, Section 4 of the Department of Insurance Standards of Practice for Land Surveyors, having a ratio of precision of the unadjusted survey greater than 1:10,000.

BENNIE O. WHEELER
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 1346
6/1/2023

Surveyor Information
Bennie O. Wheeler, R.L.S.
ELI, LLC
1420 Donelson Pike, Suite A12
Nashville, Tn 37217
Phone: 615-383-6300
Email: Bennie.Wheeler@eli-llc.com

Certificate Of Approval of Subdivision Name, Street Names, and Addressing

Subdivision name and street names approved by the Williamson County Emergency Management Agency.

Williamson County Emergency Management Agency _____ Date _____

City of Franklin _____ Date _____

Certificate Of Approval of Sewer Systems

I hereby certify that:
(1) The sewer system designated in Parish Presbyterian Church Subdivision has been installed in accordance with City specifications, or
(2) A performance agreement and surety in the amount of $ _____ for the sewer system has been posted with the City of Franklin, Tennessee, to assure completion of such systems.

Director, Water Management Department _____ Date _____
City of Franklin, Tennessee

Certificate Of Approval of Water

I hereby certify that:
(1) The water system designated in Parish Presbyterian Church Subdivision has been installed in accordance with MUD specifications, or
(2) A performance agreement and surety in the amount of $ _____ for the water system has been posted with the Milcrofton Utility District to assure completion of such improvements.

General Manager, Milcrofton Utility District _____ Date _____

Certificate Of Approval of Streets, Drainage, and Sidewalks

I hereby certify that:
(1) the streets, drainage, and sidewalks designated in Parish Presbyterian Church Subdivision has been installed in accordance with City specifications, or
(2) a performance agreement and surety in the amount of $ _____ for streets, $ _____ for access, $ _____ for drainage,
and $ _____for sidewalks has been posted with the City of Franklin, Tennessee, to assure completion of such improvements.

Director, Streets Department _____ Date _____
City of Franklin, Tennessee

Certificate Of Approval for Recording

Approved by the Franklin Municipal Planning Commission, Franklin, Williamson County, Tennessee, with the exception of such conditions, if any, as are noted in the Planning Commission minutes for the _____ day of _____,
20 ___ , and this plat has been approved for recording in the Register's Office of Williamson County.

Secretary, Franklin Municipal Planning Commission _____ Date _____

PARISH PRESBYTERIAN CHURCH SUBDIVISION
FINAL PLAT
SHEET 1 OF 3

14th CIVIL DISTRICT
FRANKLIN, WILLIAMSON COUNTY, TENNESSEE
CITY OF FRANKLIN PROJECT # 8181
DATE: June 1, 2023

ENERGY LAND & INFRASTRUCTURE
1420 DONELSON PIKE, SUITE A12 • NASHVILLE, TN 37217
OFFICE 615-383-6300 • WWW.ELI-LLC.COM
ENGINEERS•SURVEYORS•INFRASTRUCTURE•ENVIRONMENTAL

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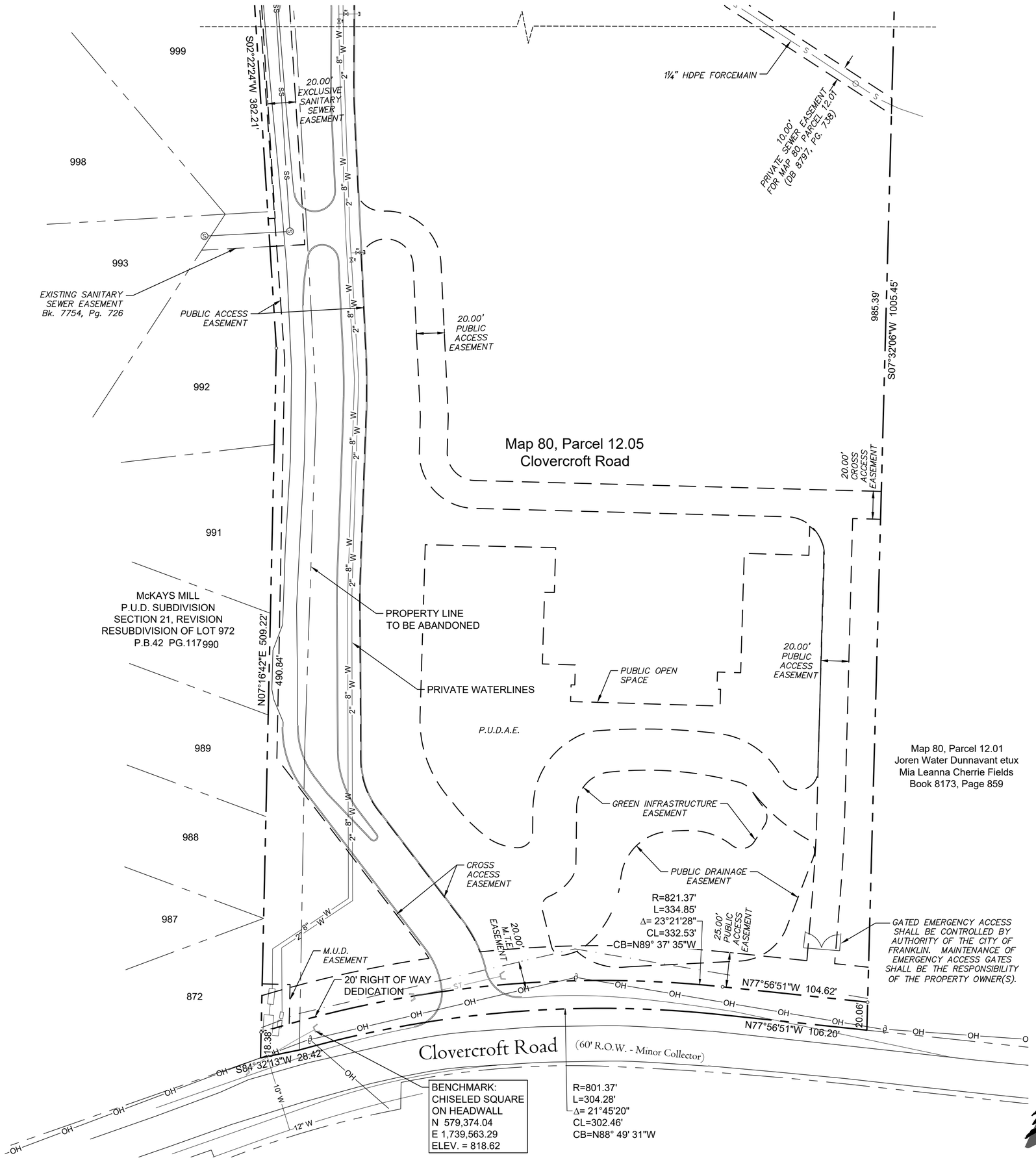
Legend

- Fire Hydrant
- W — Water Line
- SS — Sewer Line
- Sewer Manhole
- Iron Rod (New)
- Monument (New)
- Proposed Stormwater Inlet
- Concrete Sidewalk
- Sidewalk Ramp
- 1 — Lot Number
- 325 — Address Number
- Tree Save Canopy



BENNIE O. WHEELER
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE COMMERCE
6/1/2023
TENNESSEE NO. 1546

PARISH PRESBYTERIAN CHURCH SUBDIVISION, FINAL PLAT

SHEET 2 OF 3

14th CIVIL DISTRICT
FRANKLIN, WILLIAMSON COUNTY, TENNESSEE
CITY OF FRANKLIN PROJECT # 8181
DATE: June 1, 2023

ENERGY LAND & INFRASTRUCTURE
1420 DONELSON PIKE, SUITE A12 • NASHVILLE, TN 37217
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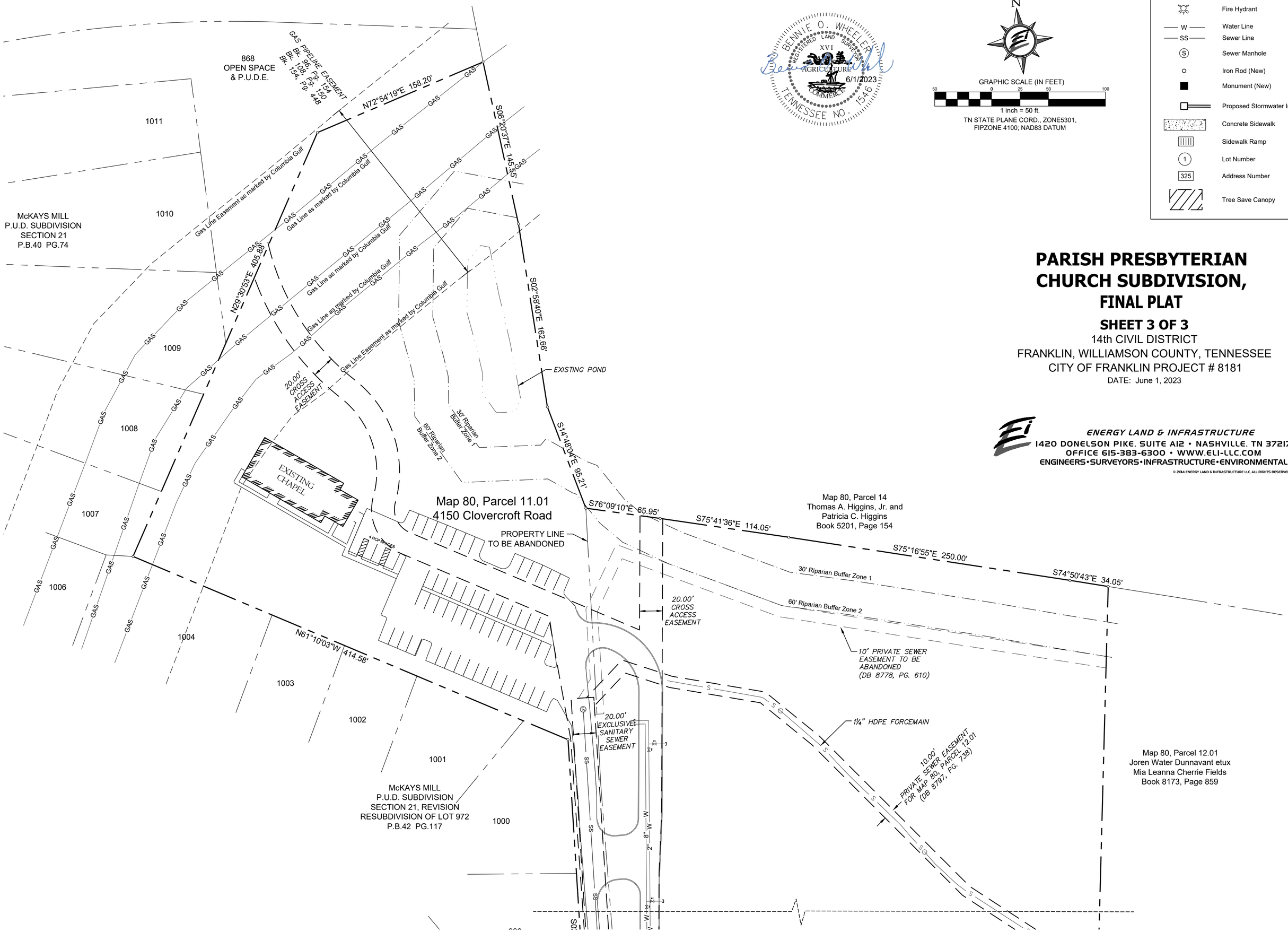

BENNIE O. WHEELER
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE COMMERCE
TENNESSEE NO. 1546
6/1/2023

N

GRAPHIC SCALE (IN FEET)
50 0 25 50 100
1 inch = 50 ft.
TN STATE PLANE CORD., ZONE5301,
FIPZONE 4100; NAD83 DATUM

Legend

- Fire Hydrant
- W — Water Line
- SS — Sewer Line
- Sewer Manhole
- Iron Rod (New)
- Monument (New)
- Proposed Stormwater Inlet
- Concrete Sidewalk
- Sidewalk Ramp
- 1 — Lot Number
- 325 — Address Number
- Tree Save Canopy

PARISH PRESBYTERIAN CHURCH SUBDIVISION, FINAL PLAT

SHEET 3 OF 3

14th CIVIL DISTRICT
FRANKLIN, WILLIAMSON COUNTY, TENNESSEE
CITY OF FRANKLIN PROJECT # 8181
DATE: June 1, 2023

ENERGY LAND & INFRASTRUCTURE
1420 DONELSON PIKE, SUITE A12 • NASHVILLE, TN 37217
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HISTORIC FRANKLIN TENNESSEE

City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04780

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Amy Diaz-Barriga, Asst Director of Planning Development
Chelsea Randolph, Principal Planner

SUBJECT:

Westhaven PUD Subdivision, Final Plat, Section 63, Creating 63 Single-Family Lots, 2 Open Space Lots, And Dedicating Public Right-Of-Way And Easements, On 16.789 Acres, Located Near The Intersection Of Eliot Road And Congress Drive. (CONSENT AGENDA)

PURPOSE:

PROJECT INFORMATION
COF Project Number: 8190
Applicant: Abigail Overstreet, Wilson and Associates
Owner: Westhaven Owner LP, Rep. Brian Sewell

BACKGROUND/STAFF COMMENTS:
This final plat creates 63 single-family lots, 2 open space lots, and dedicates right-of-way and easements within the Westhaven PUD Subdivision. The corresponding site plan was approved on the December 2022 Administrative agenda, and both the final plat and the site plan are consistent with the development plan. The creation of new lots on this final plat requires approval by the Franklin Municipal Planning Commission.

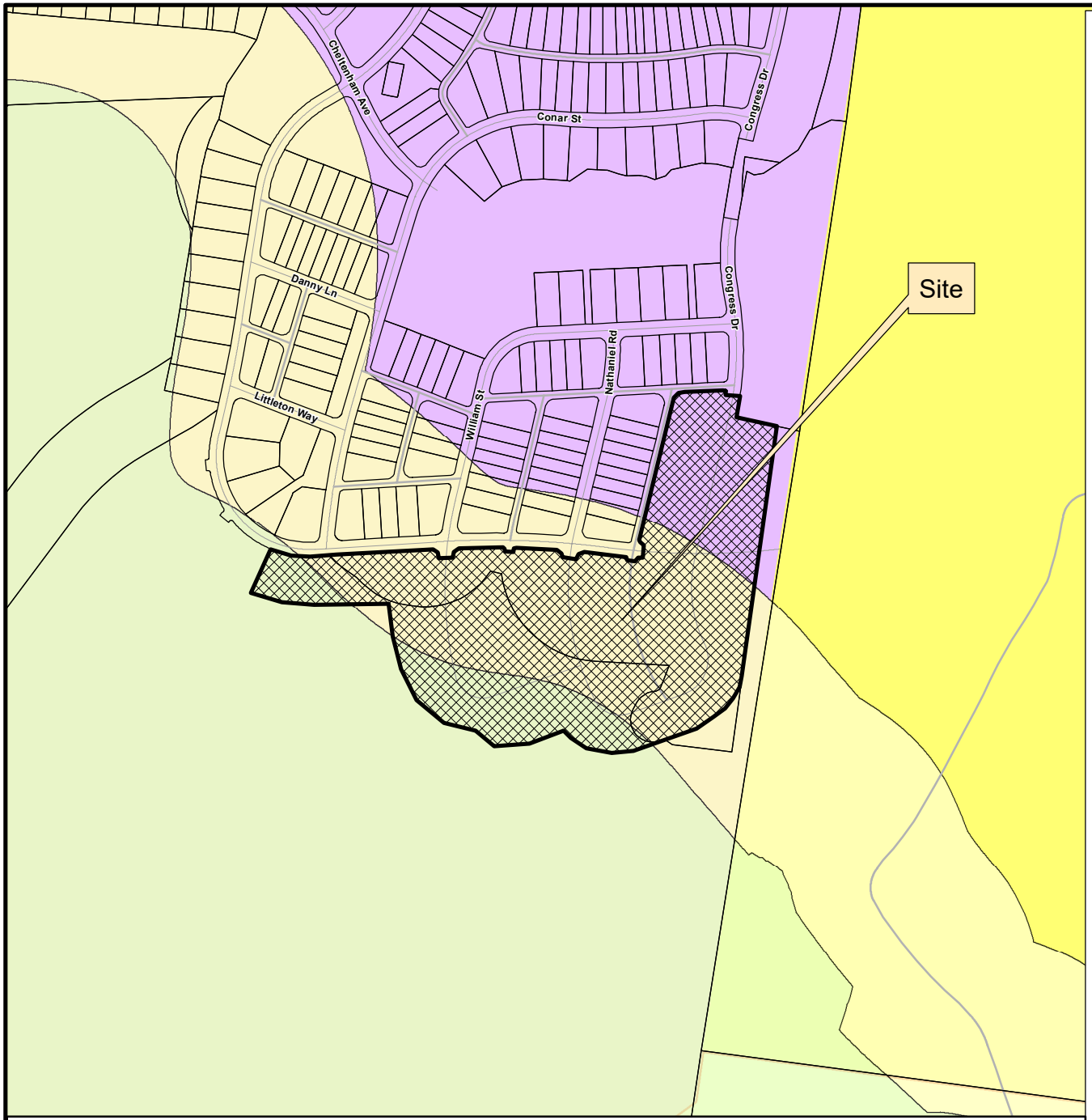
PROCEDURAL REQUIREMENTS:
1. In addition to uploading the corrected plat to the online plan review website (https://franklin.contractorsplanroom.com/secure/), the applicant shall submit the Mylar, to the Department of Building and Neighborhood Services (Suite 110, Franklin City Hall).
2. The mylar shall be 18 inches by 24 inches in size. The Certificates of Approval for the Subdivision Name and Street Names, Water System (if not COF Water), Survey, and Ownership shall be signed when the plat is resubmitted. The Mylar shall be submitted to BNS within five (5) business days of the corrected electronic plat being uploaded to the online plan review website (or vice versa) or the item shall be rejected as incomplete for City review. With the resubmittal, each condition of approval/open issue in the online plan review system shall contain a full response from the applicant as to the satisfaction or completion of that condition.
3. The city's project identification number shall be included on all correspondence with any city department relative to this project.

FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff recommends approval with conditions of Westhaven PUD Subdivision, Final Plat, Section 63. The conditions are attached.



WESTHAVEN PUD SUBDIVISION, SECTION 63
FINAL PLAT

Project Information
Existing Zoning: PD Planned District
Overlay Districts: HHO Hillside/Hillcrest Overlay
Site Acreage: 16.79 acres
Total Number of Lots: 63

Legend

- Westhaven PUD Subdivision, Section 63
- Hillside/Hillcrest Overlay
- 500 Ft Buffer of Hillside
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
- RC12 Regional Commerce 12 District
- GO General Office District
- LI Light Industrial District
- HI Heavy Industrial District

This map was created by the Franklin Planning Department.
It was compiled from the most authentic information available.
The City is not responsible for any errors or omissions contained hereon.
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N

0 250 500 1,000
Feet

HISTORIC FRANKLIN TENNESSEE

COF no: 8190

CONDITIONS OF APPROVAL:

Open Issues: 11 These issues are currently being filtered

Engineering - Final Plat Checklist

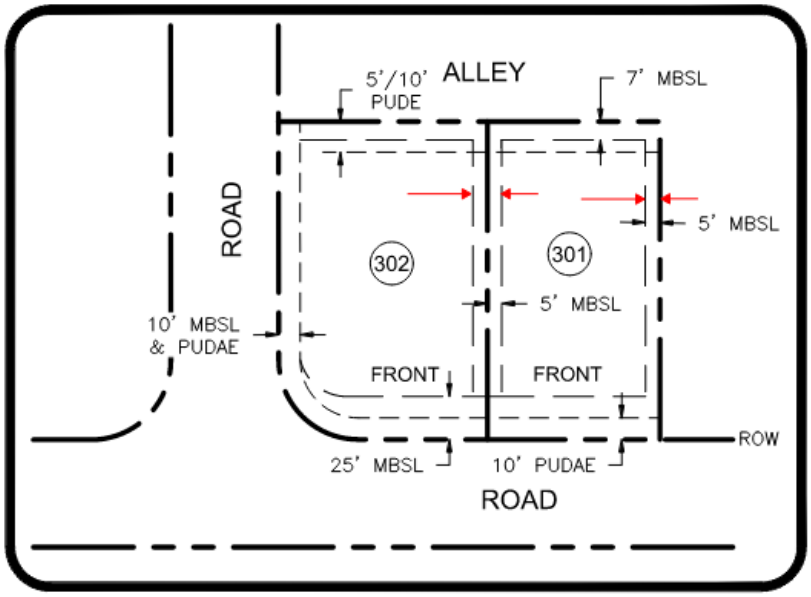
General Issues

4. 0. General Information

lance.fittro@franklintn.gov Applicant shall ensure that any modifications to the site plan COF #7971, which is being reviewed concurrently with this final plat, are reflected on the final plat. The final plat shall match the site plan.

5. C. Final Plat

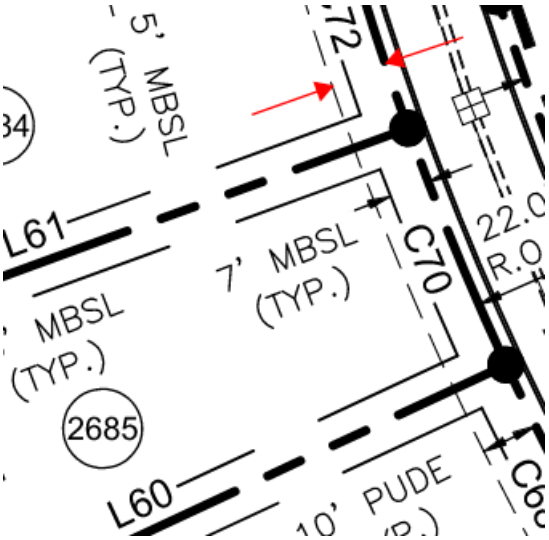
lance.fittro@franklintn.gov For the alley loaded typical lot layout now shown on the plans, Applicant shall show the required lot line drainage easements between lots (5 ft on each side of the property line for 10 ft total width):



TYPICAL LOT LAYOUT - ALLEY LOADED LOTS
N.T.S.

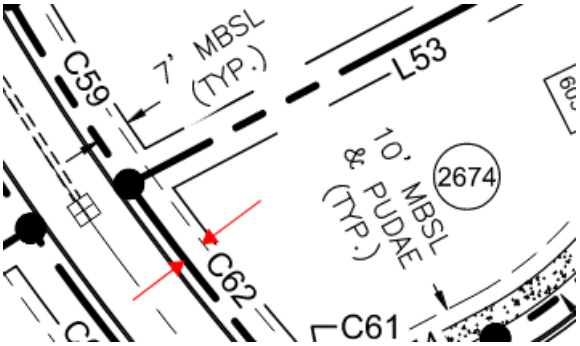
16. C. Final Plat

lance.fittro@franklintn.gov The previous comment has not been fully-addressed. Applicant shall dimension and label the 10 ft PUDE below as it was shown on the Section 63 site plan.



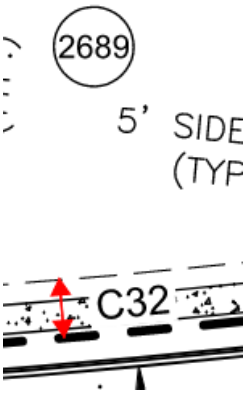
17. C. Final Plat

lance.fittro@franklintn.gov The previous comment has not been fully-addressed. Applicant shall dimension and label the 5 ft PUDE below as it was shown on the Section 63 site plan.



18. C. Final Plat

lance.fittro@franklintn.gov The previous comment has not been addressed. Applicant shall dimension and label the 10' PUDAE shown below:



24. C. Final Plat

lance.fittro@franklintn.gov Applicant shall label the partial lot line table and curve tables shown on Sheet 2 to clarify the intent for these to describe the boundary for Section 63.

26. Site Plan Conditions of Approval

lance.fittro@franklintn.gov The below conditions of approval from the Section 63 site plan shall be satisfied prior to submittal of the final plat to One Stop:

As a condition of approval for the extensive excavation of bedrock proposed for construction of the bioretention areas on the site, all excavation of bedrock for the proposed stormwater management features shall be completed prior to the recording of the final plat.

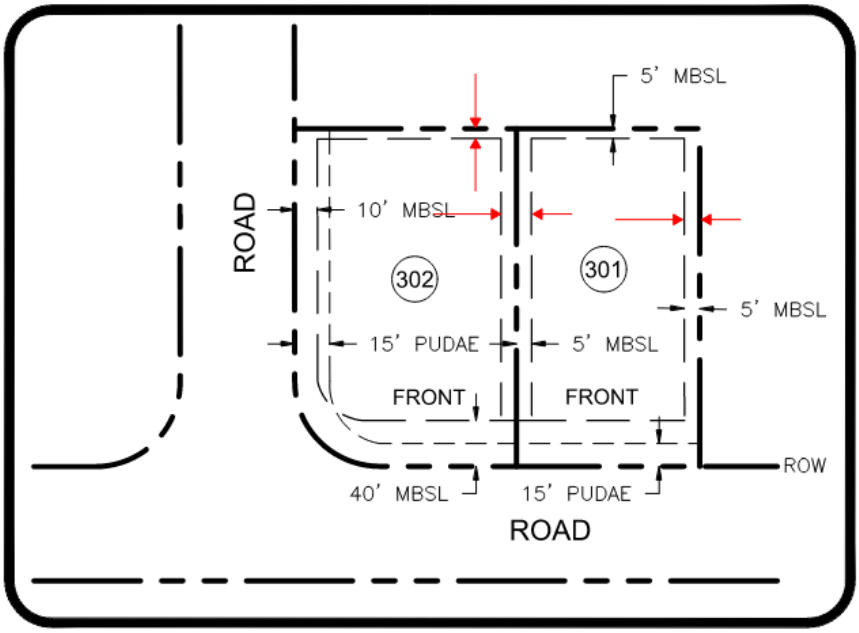
Prior to One Stop Approval of any associated Final Plat, all retaining wall building permits shall be approved by the Building and Neighborhood Services (BNS).

28. C. Final Plat

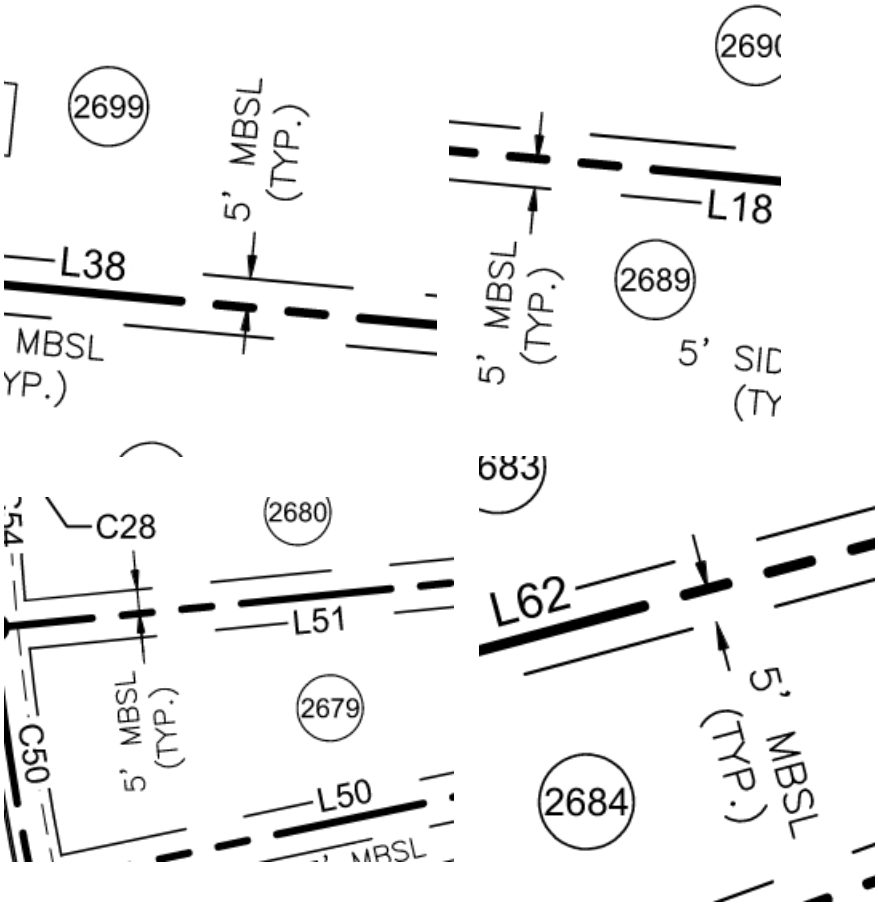
lance.fittro@franklintn.gov Per Sec. 23-106(2)(f) of the Stormwater Ordinance:

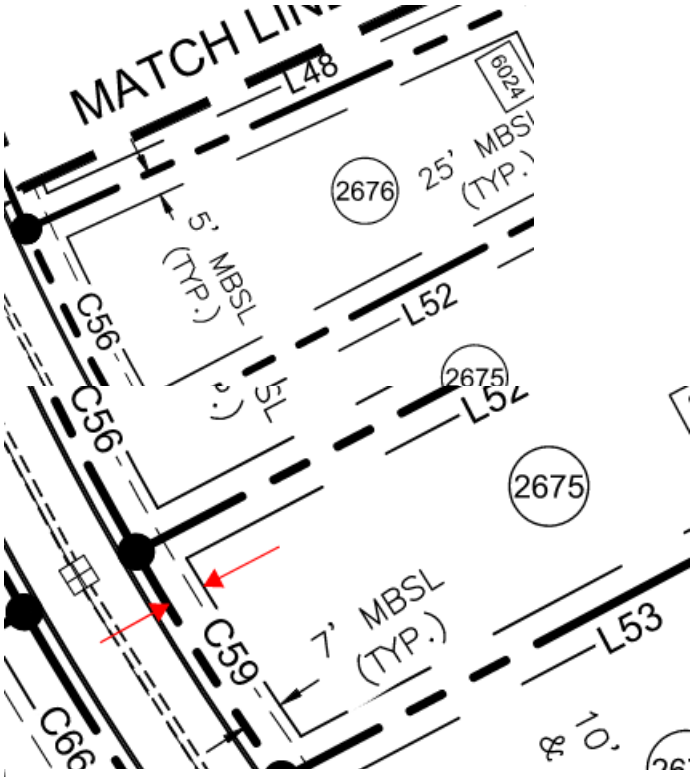
(ii) All new Development and Redevelopment shall be designed and graded so that a minimum ten (10) foot public drainage easement and stormwater conveyance exist between each property.

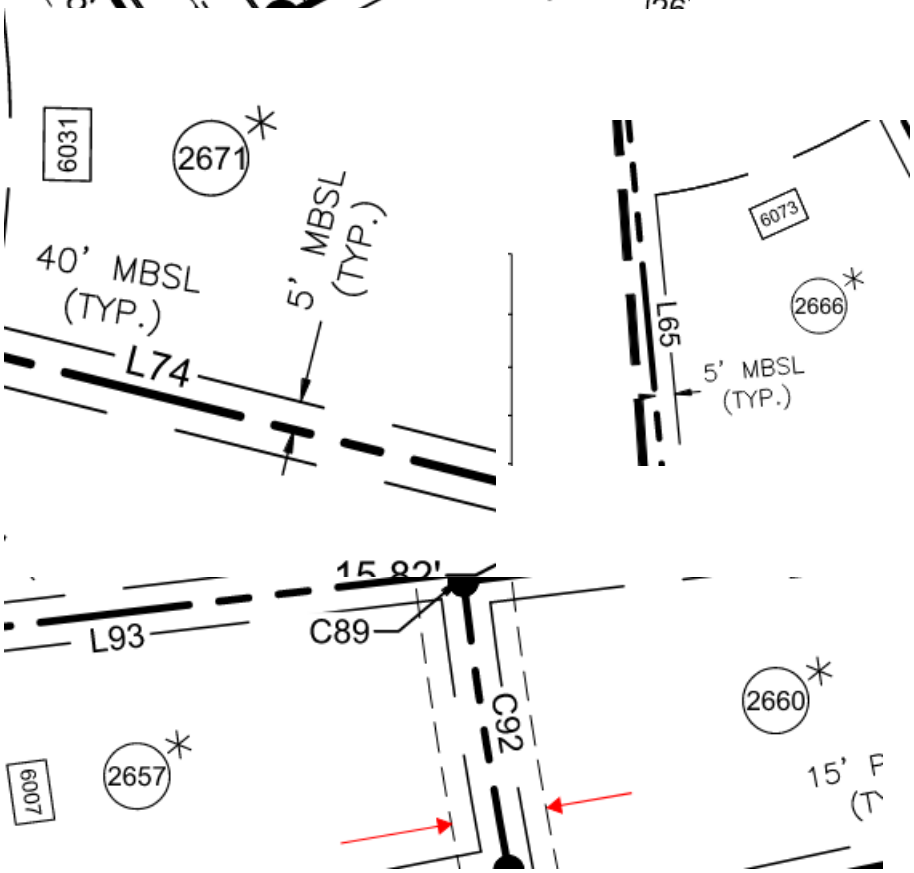
Applicant shall revise the plat to consistently show the required 10' drainage easement along property lines between lots. This is a new comment due to removal of the required lot line drainage easements in multiple locations throughout the plat sheets, and generally inconsistent reflection of required public easements throughout the plat. Several locations where easements were erroneously eliminated with this submittal are shown below, but may not be representative of all such issues. Applicant shall correctly reflect all required public easements on the plat.

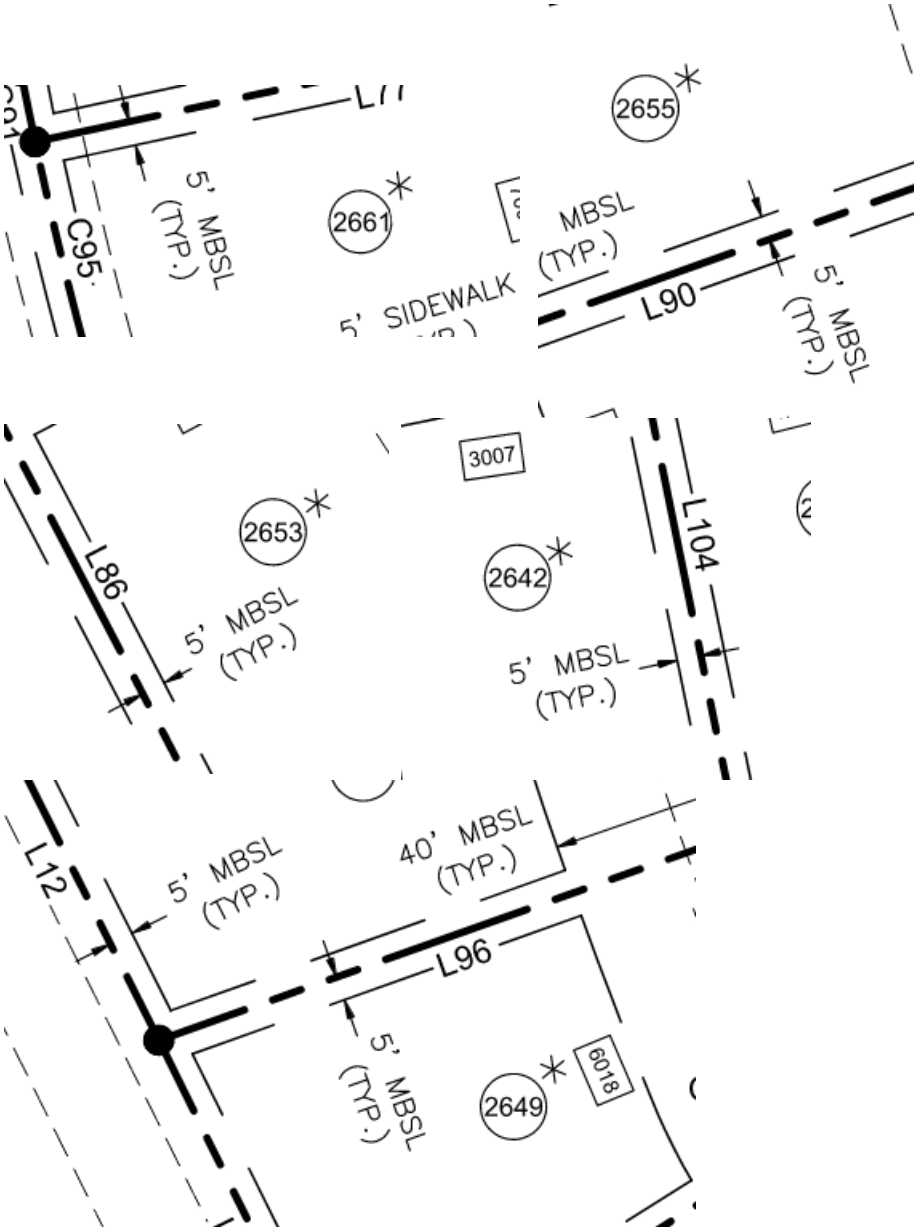


TYPICAL LOT LAYOUT
N.T.S.




MATCH LIN
L48
6024
2676
25' MBSL
(TYP.)
5' MBSL
(TYP.)
L52
C56
C56
2675
2675
7' MBSL
(TYP.)
L53
C59


6031
2671
40' MBSL
(TYP.)
5' MBSL
(TYP.)
L74
6073
2666
L65
5' MBSL
(TYP.)
L93
C89
C92
2660
2657
6007



29. C. Final Plat

lance.fittro@franklintn.gov This is a new comment for clarification of a note included on the plat:

Applicant shall revise General Note 30 for the underlined portion below so that it reads:
30. Homes on Lots 2647-2656 shall be constructed with residential fire sprinklers.

Performance Agreement and Surety

General Issues

3. Engineering Sureties

kevin.long@franklintn.gov Any unposted sureties associated with this development from site plan:
COF #7971 (Westhaven PUD Subdivision, Site Plan, Section 63)
shall be transferred to this final plat as a condition of approval.

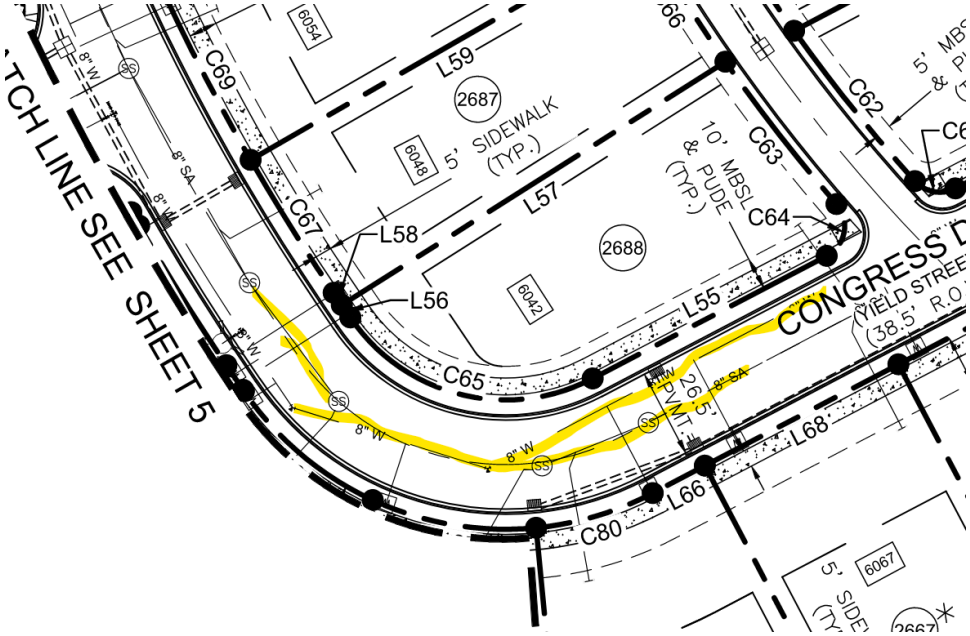
(This comment serves only as a reminder to staff and does not hinder approval. No response is necessary from the applicant beyond "N/A" or "Acknowledged" to satisfy requirements of the IDT system.)

Water/Sewer

General Issues

2. Water and sewer conflict and clarification

scott.andrews@franklintn.gov Applicant has failed to address the comment. Water layout in the plat still does not match the site plan and is shown in conflict with sewer. Applicant shall revise.



GENERAL NOTES:

1. THE PURPOSE OF THIS PLAT IS TO CREATE 63 SINGLE-FAMILY RESIDENTIAL LOTS, AND 2 OPEN SPACES, AND TO DEDICATE PUBLIC RIGHT-OF-WAY AND EASEMENTS.
2. SUBJECT PROPERTY IS SHOWN AS SECTION 63 LOCATED IN WESTHAVEN P.U.D. SUBDIVISION, FIFTH CIVIL DISTRICT, CITY OF FRANKLIN, WILLIAMSON COUNTY, TENNESSEE.
3. SUBJECT PROPERTY IS IDENTIFIED AS A PORTION OF PARCEL 1.16 ON PROPERTY MAP 77.
4. ZONING: PLANNED DEVELOPMENT (2.26)
5. LOTS IN SECTION 63 FALL WITHIN THE T4 TRANSECT ZONE AS DEFINED IN THE WESTHAVEN CONCEPT PLAN (REVISION 4) AND PATTERN BOOK, REVISED 05/08/07.

   MINIMUM SETBACK REQUIREMENTS :
   TRANSECT ZONE T4

   FRONT SETBACK: 25'-35' (MAY BE REDUCED TO 10', SEE NOTE 6)
   SIDE SETBACK: 5' (MINIMUM 10' BETWEEN BUILDINGS)
   SIDE SETBACK FOR ROW HOUSES OR SIDEYARD HOUSES: 0'
   CORNER SIDE SETBACK: 10'
   REAR SETBACK: EXISTING NOTE BELOW TO REMAIN

   REAR YARD/ALLEY SETBACK: 7' (MINIMUM 18' WIDE X 22' DEEP PARKING APRON IS REQUIRED FROM THE FRONT OF THE APRON TO THE FACE OF ALLY CURB) EXCEPT ON STREET CORNER LOTS AND LOTS THAT PROVIDE GARAGES WITH A STORAGE AREA OF 50 SQUARE FEET OR GREATER.

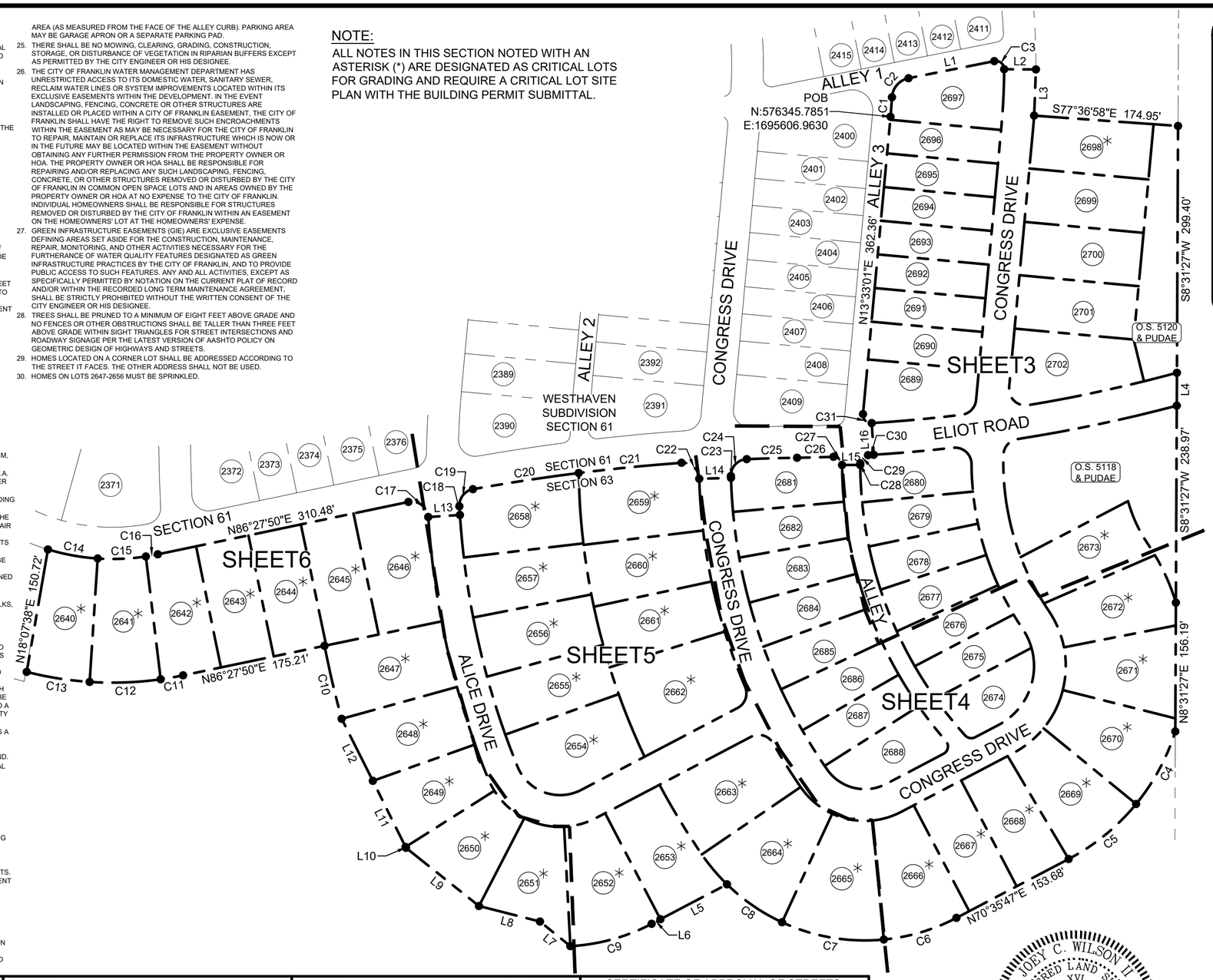
   NOTE: PROJECTIONS SHALL NOT EXTEND TO A POINT CLOSER THAN 4 FEET FROM THE PROPERTY LINE. ANY PROJECTIONS (INCLUDING SOFFITS) INTO THE 5' SIDEYARD SETBACK SHALL HAVE A ONE-HOUR FIRE-RESISTIVE CONSTRUCTION ON THE UNDERSIDE. REFER TO THE 2004 IRC SUPPLEMENT R302.1 EXTERIOR WALLS FOR FURTHER EXPLANATION.

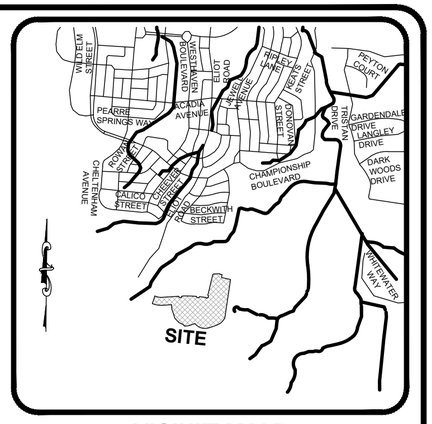
6. FRONT SETBACK MAY BE REDUCED TO 10' TO MATCH THE FRONT ENCROACHMENT ZONE ON OCCASIONS WHEN AN ARCHITECTURAL DEVIATION HAS BEEN REVIEWED AND APPROVED BY THE WESTHAVEN DESIGN REVIEW COMMITTEE.
7. SECTION 63 INCLUDES THE FOLLOWING BUILDING TYPES AND SIZES: SIDE YARD HOUSES, COTTAGES, HOUSES, AND COURTYARD HOUSES.

   DWELLING UNIT LIVING AREAS: EXCLUSIVE OF OPEN PORCHES, GARAGES, AND ANCILLARY APARTMENTS:
   MINIMUM.....1,000 S.F.
   MAXIMUM.....10,000 S.F.
   MAXIMUM BUILDING HEIGHTS....2 STORIES

8. BEARINGS ARE BASED ON TENNESSEE STATE PLANE COORDINATE SYSTEM, NAD 83 DATUM.
9. SUBJECT PROPERTY IS NOT WITHIN A FLOOD HAZARD AREA AS PER F.E.M.A. FLOOD INSURANCE RATE MAP NO. 47187C0195F, REVISION DATE SEPTEMER 29, 2006.
10. THE DEVELOPER ACKNOWLEDGES THAT ALL LOTS HAVE ADEQUATE BUILDING ENVELOPES AND NO VARIANCES WILL BE REQUIRED.
11. ALL STREETS AND ALLEYS ARE DESIGNATED AS PUBLIC RIGHT-OF-WAY; THE CITY OF FRANKLIN IS NOT RESPONSIBLE FOR THE REPLACEMENT OR REPAIR OF ANY PRIVATE STRUCTURES WITHIN PUBLIC EASEMENTS SHOULD THE STRUCTURES BE DISTURBED IN THE PROCESS OF THE CITY EXERCISING ITS EASEMENT RIGHTS.
12. STREETS, DRAINAGE EASEMENTS, STRUCTURES, AND CULVERTS SHALL BE MAINTAINED BY THE CITY OF FRANKLIN. DETENTION PONDS AND OUTLET STRUCTURES WITHIN PUBLIC DRAINAGE EASEMENTS ARE TO BE MAINTAINED BY THE WESTHAVEN HOMEOWNERS' ASSOCIATION.
13. STORMWATER QUALITY SHALL BE ADDRESSED WITH EACH SITE PLAN.
14. OPEN SPACE AREAS, ROADWAY MEDIANS, BRICK PEDESTRIAN CROSSWALKS, BIKE PATHS, SIDEWALKS OUTSIDE OF RIGHT-OF-WAYS, TRAILS AND DETENTION FACILITIES SHALL BE MAINTAINED BY THE WESTHAVEN HOME OWNERS ASSOCIATION AND SHALL BE PUBLIC UTILITY, DRAINAGE AND ACCESS EASEMENTS.
15. BUILDING ELEMENTS: PORCHES, STOOPS, CHIMNEYS, BAY WINDOWS, AND BALCONIES MAY ENCROACH INTO THE FRONT YARD SETBACKS. CHIMNEYS MAY ENCROACH UP TO 1'-0" FROM THE PROPERTY LINE WITHIN THE SIDEYARD SETBACKS. WHERE CHIMNEYS ENCROACH INTO THE SIDEYARD SETBACK, THE MINIMUM SEPARATION BETWEEN DWELLINGS SHALL BE REDUCED BY THE DISTANCE OF THE ENCROACHMENT ONLY AT THE WIDTH OF THE FIREPLACE. THE REMAINDER OF THE SIDEYARD SETBACK SHALL BE THE STATED MINIMUM. CHIMNEYS THAT ENCROACH CLOSER THAN 5'-0" TO A PROPERTY LINE MUST MEET THE FIRE RATING REQUIREMENTS OF THE CITY OF FRANKLIN BUILDING CODES.
16. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, (INCLUDING CABLE TELEVISION, ELECTRICAL, NATURAL GAS, SEWER, TELEPHONE AND WATER LINES) SHALL BE PLACED UNDERGROUND.
17. ALL STREET LIGHT LOCATIONS AND QUANTITIES ARE APPROXIMATE. FINAL POSITIONING AND QUANTITY SHALL BE AT THE DIRECTION OF MTEMC.
18. MINERAL RIGHTS ARE TO BE HELD BY WESTHAVEN PARTNERS, LLC.
19. PROPERTY NUMBERS ARE INDICATED AS SUCH: LOT NUMBERS ARE ENCIRCLED AND ADDRESS NUMBERS ARE ENCLOSED BY RECTANGULAR SHAPE.
20. AT ALL TEMPORARY TURNAROUNDS, A SIGN SHALL BE PLACED STATING, "STREET TO BE EXTENDED BY AUTHORITY OF THE CITY OF FRANKLIN."
21. MAINTENANCE OF ALL STORMWATER MANAGEMENT FEATURES, INCLUDING LOT LINE SWALES, SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER(S) OR HOA.
22. NO OBSTRUCTIONS OR ENCROACHMENTS WHICH IMPEDE THE FLOW OF STORMWATER SHALL BE PERMITTED WITHIN PUBLIC DRAINAGE EASEMENTS. THE CITY OF FRANKLIN IS NOT RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY ENCROACHMENTS THAT ARE DAMAGED OR REMOVED IN THE COURSE OF MAINTENANCE ACTIVITY WITHIN EASEMENTS.
23. SIDEWALKS AND TRAILS OUTSIDE OF PUBLIC RIGHT-OF-WAY SHALL BE PUBLIC ACCESS EASEMENTS AND SHALL BE MAINTAINED BY THE HOMEOWNERS' ASSOCIATION.
24. REQUIRED EXTERIOR PARKING:
    A. SINGLE FAMILY DETACHED RESIDENCE 2 SPACES REQUIRED EXCEPT ON STREET CORNER LOTS. SPACES MUST BE ON THE SAME LOT AS THE RESIDENCE. SPACES SHALL BE A MINIMUM OF 18' WIDE BY 22' DEEP PAVED AREA (AS MEASURED FROM THE FACE OF THE ALLEY CURB). PARKING AREA MAY BE GARAGE APRON OR A SEPARATE PARKING PAD.
25. THERE SHALL BE NO MOWING, CLEARING, GRADING, CONSTRUCTION, STORAGE, OR DISTURBANCE OF VEGETATION IN RIPARIAN BUFFERS EXCEPT AS PERMITTED BY THE CITY ENGINEER OR HIS DESIGNEE.
26. THE CITY OF FRANKLIN WATER MANAGEMENT DEPARTMENT HAS UNRESTRICTED ACCESS TO ITS DOMESTIC WATER, SANITARY SEWER, RECLAIM WATER LINES OR SYSTEM IMPROVEMENTS LOCATED WITHIN ITS EXCLUSIVE EASEMENTS WITHIN THE DEVELOPMENT. IN THE EVENT LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES ARE INSTALLED OR PLACED WITHIN A CITY OF FRANKLIN EASEMENT, THE CITY OF FRANKLIN SHALL HAVE THE RIGHT TO REMOVE SUCH ENCROACHMENTS WITHIN THE EASEMENT AS MAY BE NECESSARY FOR THE CITY OF FRANKLIN TO REPAIR, MAINTAIN OR REPLACE ITS INFRASTRUCTURE WHICH IS NOW OR IN THE FUTURE MAY BE LOCATED WITHIN THE EASEMENT WITHOUT OBTAINING ANY FURTHER PERMISSION FROM THE PROPERTY OWNER OR HOA. THE PROPERTY OWNER OR HOA SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ANY SUCH LANDSCAPING, FENCING, CONCRETE, OR OTHER STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN IN COMMON OPEN SPACE LOTS AND IN AREAS OWNED BY THE PROPERTY OWNER OR HOA AT NO EXPENSE TO THE CITY OF FRANKLIN. INDIVIDUAL HOMEOWNERS SHALL BE RESPONSIBLE FOR STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN WITHIN AN EASEMENT ON THE HOMEOWNERS' LOT AT THE HOMEOWNERS' EXPENSE.
27. GREEN INFRASTRUCTURE EASEMENTS (GIE) ARE EXCLUSIVE EASEMENTS DEFINING AREAS SET ASIDE FOR THE CONSTRUCTION, MAINTENANCE, REPAIR, MONITORING, AND OTHER ACTIVITIES NECESSARY FOR THE FURTHERANCE OF WATER QUALITY FEATURES DESIGNATED AS GREEN INFRASTRUCTURE PRACTICES BY THE CITY OF FRANKLIN, AND TO PROVIDE PUBLIC ACCESS TO SUCH FEATURES. ANY AND ALL ACTIVITIES, EXCEPT AS SPECIFICALLY PERMITTED BY NOTATION ON THE CURRENT PLAT OF RECORD AND/OR WITHIN THE RECORDED LONG TERM MAINTENANCE AGREEMENT, SHALL BE STRICTLY PROHIBITED WITHOUT THE WRITTEN CONSENT OF THE CITY ENGINEER OR HIS DESIGNEE.
28. TREES SHALL BE PRUNED TO A MINIMUM OF EIGHT FEET ABOVE GRADE AND NO FENCES OR OTHER OBSTRUCTIONS SHALL BE TALLER THAN THREE FEET ABOVE GRADE WITHIN SIGHT TRIANGLES FOR STREET INTERSECTIONS AND ROADWAY SIGNAGE PER THE LATEST VERSION OF AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS.
29. HOMES LOCATED ON A CORNER LOT SHALL BE ADDRESSED ACCORDING TO THE STREET IT FACES. THE OTHER ADDRESS SHALL NOT BE USED.
30. HOMES ON LOTS 2647-2656 MUST BE SPRINKLED.

NOTE:
ALL NOTES IN THIS SECTION NOTED WITH AN ASTERISK (*) ARE DESIGNATED AS CRITICAL LOTS FOR GRADING AND REQUIRE A CRITICAL LOT SITE PLAN WITH THE BUILDING PERMIT SUBMITTAL.





VICINITY MAP
NOT TO SCALE

OWNER: WESTHAVEN OWNER, LP
C/O BRIAN SEWELL
3990 HILLSBORO PIKE, SUITE 200
NASHVILLE, TN 37215
(615) 778-3150

SURVEYOR: WILSON & ASSOCIATES, P.C.
108 BEASLEY DRIVE
FRANKLIN, TN 37064
JOEY C. WILSON II, PE, RLS
(615)794-2275
JWILSON@WILSONPC.COM

GRAPHIC SCALE: 1" = 100'

JOEY C. WILSON II REGISTERED LAND SURVEYOR XVI AGRICULTURE COMMERCE TENNESSEE NO. 2089

WILSON & ASSOCIATES, P.C. Engineering/Surveying/Environmental

SOUTHERN LAND COMPANY
WESTHAVEN
PUD SUBDIVISION, FINAL PLAT, SECTION 63

CERTIFICATE OF APPROVAL OF ELECTRICAL SYSTEMS

MIDDLE TENNESSEE ELECTRIC MEMBERSHIP CORPORATION (MTEMC) WILL PROVIDE ELECTRIC SERVICE TO THE SUBJECT PROPERTY ACCORDING TO THE NORMAL OPERATING PRACTICES OF MTEMC AS DEFINED IN THE RULES AND REGULATIONS, BYLAWS, POLICY BULLETINS AND OPERATIONAL BULLETINS OF MTEMC, AND IN ACCORDANCE WITH THE PLAT APPROVAL CHECKLIST, TREE PLANTING GUIDELINES AND OTHER REGULATIONS CONTAINED ON THE MTEMC WEBSITE AT WWW.MTEMC.COM (COLLECTIVELY THE "REQUIREMENTS"). NO ELECTRIC SERVICE WILL BE PROVIDED UNTIL MTEMC'S REQUIREMENTS HAVE BEEN MET AND APPROVED IN WRITING BY AN AUTHORIZED REPRESENTATIVE OF MTEMC. ANY APPROVAL IS, AT ALL TIMES, CONTINGENT UPON CONTINUING COMPLIANCE WITH MTEMC'S REQUIREMENTS.

MIDDLE TENNESSEE ELECTRIC MEMBERSHIP CORPORATION DATE

CERTIFICATE OF APPROVAL OF WATER SYSTEMS

I HEREBY CERTIFY THAT:

(1) THE WATER SYSTEM DESIGNATED IN WESTHAVEN PUD SUBDIVISION, SECTION 63 , HAS BEEN INSTALLED IN ACCORDANCE WITH HB & TS SPECIFICATIONS, OR

(2) A PERFORMANCE AGREEMENT AND SURETY IN THE AMOUNT OF $_____ FOR THE WATER SYSTEM HAS BEEN POSTED WITH THE CITY OF FRANKLIN, TENNESSEE, TO ASSURE COMPLETION OF SUCH SYSTEM.

HB&TS UTILITY DISTRICT DATE

CERTIFICATE OF APPROVAL OF SEWER SYSTEMS

I HEREBY CERTIFY THAT:

(1) THE SEWER SYSTEM DESIGNATED IN WESTHAVEN PUD SUBDIVISION, SECTION 63 , HAS BEEN INSTALLED IN ACCORDANCE WITH CITY SPECIFICATIONS, OR

(2) A PERFORMANCE AGREEMENT AND SURETY IN THE AMOUNT OF $_____ FOR THE SEWER SYSTEM HAS BEEN POSTED WITH THE CITY OF FRANKLIN, TENNESSEE, TO ASSURE COMPLETION OF SUCH SYSTEM.

DIRECTOR WATER MANAGEMENT DEPARTMENT DATE
CITY OF FRANKLIN, TENNESSEE

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, SIDEWALKS & GIE

I HEREBY CERTIFY THAT:

(1) THE STREETS, DRAINAGE, SIDEWALKS, AND GREEN INFRASTRUCTURE DESIGNATED IN WESTHAVEN PUD SUBDIVISION, SECTION 63 HAVE BEEN INSTALLED IN ACCORDANCE WITH CITY SPECIFICATIONS, OR

(2) A PERFORMANCE AGREEMENT AND SURETY IN THE AMOUNT OF $_____ FOR STREETS, $_____ FOR DRAINAGE, $_____ FOR SIDEWALKS, AND $_____ FOR GREEN INFRASTRUCTURE HAS BEEN POSTED WITH THE CITY OF FRANKLIN, TENNESSEE, TO ASSURE COMPLETION OF SUCH IMPROVEMENTS.

DIRECTOR, STREETS DEPARTMENT DATE
CITY OF FRANKLIN, TENNESSEE

CERTIFICATE OF APPROVAL OF SUBDIVISIION NAME, STREET NAMES, AND ADDRESSING

SUBDIVISION NAME AND STREET NAMES APPROVED BY THE WILLIAMSON COUNTY EMERGENCY MANAGEMENT AGENCY AND THE CITY OF FRANKLIN.

WILLIAMSON COUNTY EMERGENCYMANAGEMENT AGENCY DATE

CITY OF FRANKLIN DATE

CERTIFICATE OF OWNERSHIP

I (WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNER(S) OF THE PROPERTY SHOWN HEREON AS OF RECORD IN BOOK 8643, PAGE 910, R.O.W.C., TENNESSEE, AND ADOPT THE PLAN OF SUBDIVISION OF THE PROPERTY AS SHOWN HEREON AND DEDICATE ALL PUBLIC WAYS AND EASEMENTS AS NOTED. NO LOT(S) AS SHOWN HEREON SHALL AGAIN BE SUBDIVIDED, RESUBDIVIDED, ALTERED, OR CHANGED SO AS TO PRODUCE LESS AREA THAN IS HEREBY ESTABLISHED UNTIL OTHERWISE APPROVED BY THE FRANKLIN MUNICIPAL PLANNING COMMISSION, AND UNDER NO CONDITION SHALL SUCH LOT(S) BE MADE TO PRODUCE LESS AREA THAN IS PRESCRIBED BY THE RESTRICTIVE COVENANTS AS OF RECORD IN BOOK 0000, PAGE 0000, R.O.W.C., TENNESSEE, RUNNING WITH THE TITLE TO THE PROPERTY. I (WE) FURTHER CERTIFY THAT THERE ARE NO LIENS ON THIS PROPERTY, EXCEPT AS FOLLOWS: BOOK 0000, PAGE 0000, R.O.W.C.

BRIAN SEWELL, WESTHAVEN OWNER LP DATE

CERTIFICATE OF SURVEY

I (WE) HEREBY CERTIFY THAT THE SUBDIVISION PLAT AS SHOWN HEREON IS CORRECT AND THAT ALL OF THE MONUMENTS SHOWN HEREON HAVE BEEN PLACED AS INDICATED. THIS SUBDIVISION PLAT CORRECTLY REPRESENTS A SURVEY MADE UNDER MY SUPERVISION ON THE_____DAY OF_____, 20___.

JOEY C. WILSON II, TENNESSEE RLS NO. 2089 DATE
WILSON & ASSOCIATES, P.C.
ENGINEERING/SURVEYING/ENVIRONMENTAL
108 BEASLEY DRIVE, FRANKLIN, TN 37064
OFFICE: 615.794.2275 FAX 615.794.2176
JWILSON@WILSONPC.COM

CERTIFICATE OF APPROVAL OF RECORDING

APPROVED BY THE FRANKLIN MUNICIPAL PLANNING COMMISSION, FRANKLIN, WILLIAMSON COUNTY, TENNESSEE, WITH THE EXCEPTION OF SUCH CONDITIONS, IF ANY, AS ARE NOTED IN THE PLANNING COMMISSION MINUTES FOR THE _____DAY OF _____, 20___, AND THIS PLAT HAS BEEN APPROVED FOR RECORDING IN THE REGISTER'S OFFICE OF WILLIAMSON COUNTY, TENNESSEE.

SECRETARY DATE
FRANKLIN MUNICIPAL PLANNING COMMISSION

RECORDING STAMP HERE

IF YOU CAN READ THIS YOU ARE HOLDING AN UNRECORDED COPY

FINAL SUBDIVISION PLAT

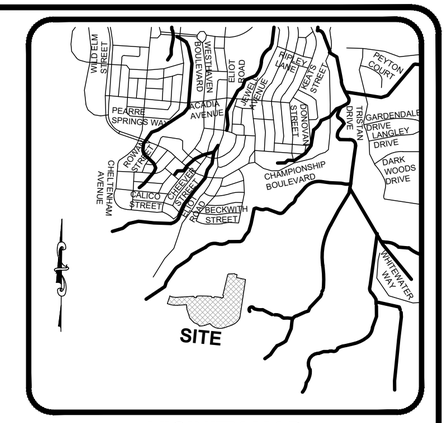
FRANKLIN - WILLIAMSON COUNTY - TENNESSEE

TOTAL ACRES:	16.789	TOTAL NO. OF LOTS:	63
ACRES NEW RD/ST:	2.422 (ROW)	L.F. OF NEW RD/ST:	2571.74
ACRES OPEN SPACE:	0.936	CIVIL DISTRICT:	5TH
DRAWN BY:	AS	CLOSURE ERROR:	SEE NOTE
SCALE:	1" = 100'	DATE:	06/01/2023

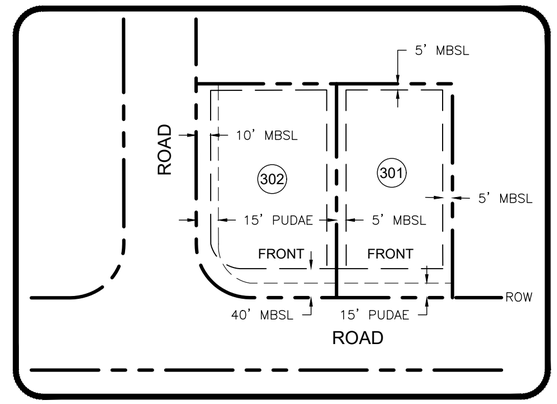
WA PROJECT NO. 20-1478 COF PROJECT NO. 8190 SHEET 1 0F 6

LEGEND

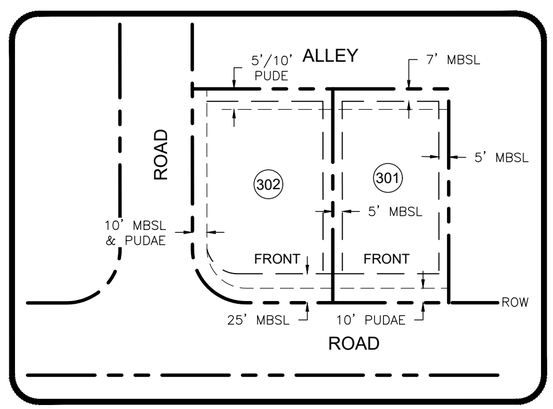
IRON PIN FOUND		FIRE HYDRANT		UTILITY POLE		PUBLIC UTIL. & DRAIN ESMT.	P.U.D.E.	BOUNDARY	
IRON PIN SET		SANITARY SEWER MH	SS	GUY ANCHOR		ADDRESSES	1234	CENTERLINE	
CONC. MON. FOUND		SANITARY SEWER CO	CO	COMMUNICATION BOX	C	HANDICAP SPACE		BUFFER	
CONC. MON. SET		AREA DRAIN		COMMUNICATION MH	C	SANITARY SEWER	8" SA	WATER FEATURE	
CONTROL POINT FOUND		CURB INLET		GAS METER	G	WATER	4" W	TREE LINE	
CONTROL POINT SET		STORM MH	ST	GAS VALVE		UNDERGROUND ELEC	UGE	R.O.W.	RIGHT OF WAY
BENCH MARK		ELECTRIC METER-BOX	E	EVERGREEN TREE		OVERHEAD ELEC	OHE	PVMT.	EDGE OF PAVEMENT
WATER METER	W	ELECTRIC MH	E	SIDEWALK		GAS	4" G	PUDE	PUBLIC UTILITY AND DRAINAGE EASEMENT
WATER VALVE		LIGHT POLE		MIN. BUIDLING SETBACK	M.B.S.L	COMMUNICATIONS	COM	G.I.E.	GREEN INFRASTRUCTURE EASEMENT



VICINITY MAP
NOT TO SCALE



TYPICAL LOT LAYOUT
N.T.S.



TYPICAL LOT LAYOUT -
ALLEY LOADED LOTS
N.T.S.

Lot Area Table		
Lot #	Area (SF)	Area (AC)
2640	10407.46	0.239
2641	10877.97	0.250
2642	10243.18	0.235
2643	9772.83	0.224
2644	9750.00	0.224
2645	9760.62	0.224
2646	12299.62	0.282
2647	12520.09	0.287
2648	10770.98	0.247
2649	9614.10	0.221
2650	9664.42	0.222
2651	9827.06	0.226
2652	12177.11	0.280
2653	11521.46	0.264
2654	12697.00	0.291
2655	9963.60	0.229
2656	9963.97	0.229
2657	9964.24	0.229
2658	12123.31	0.278
2659	12511.56	0.287
2660	10131.56	0.233

Lot Area Table		
Lot #	Area (SF)	Area (AC)
2661	10131.66	0.233
2662	15006.14	0.344
2663	13045.90	0.299
2664	13031.73	0.299
2665	12797.74	0.294
2666	11885.35	0.273
2667	9425.00	0.216
2668	9779.26	0.225
2669	11730.64	0.269
2670	12172.98	0.279
2671	11104.44	0.255
2672	10727.74	0.246
2673	9895.25	0.227
2674	6772.40	0.155
2675	6236.33	0.143
2676	5926.95	0.136
2677	6316.70	0.145
2678	6316.64	0.145
2679	6316.71	0.145
2680	7371.62	0.169
2681	7897.99	0.181

Lot Area Table		
Lot #	Area (SF)	Area (AC)
2682	6772.68	0.155
2683	6774.41	0.156
2684	6776.01	0.156
2685	6775.97	0.156
2686	6775.94	0.156
2687	6494.08	0.149
2688	7677.83	0.176
2689	8889.50	0.204
2690	6210.00	0.143
2691	5535.00	0.127
2692	5535.00	0.127
2693	5535.00	0.127
2694	5535.00	0.127
2695	5535.00	0.127
2696	5535.00	0.127
2697	8850.43	0.203
2698	9551.72	0.219
2699	9425.00	0.216
2700	9425.00	0.216
2701	9425.00	0.216
2702	11530.47	0.265

Open Space Area Table		
Parcel #	Area (SF)	Area (AC)
O.S. 5118	27928.86	0.641
O.S. 5120	12864.55	0.295

Lot Line Table		
Line #	Length	Direction
L1	106.11'	N87°00'16"E
L2	38.50'	S81°23'50"E
L3	56.07'	S10°29'36"W
L4	39.90'	S8°31'27"W
L5	91.13'	S70°35'47"W
L6	12.05'	S70°35'47"W
L7	47.35'	N42°43'27"W
L8	76.39'	N67°24'56"W
L9	113.16'	N43°10'45"W
L10	1.19'	N18°01'28"W
L11	89.49'	N18°01'28"W
L12	84.21'	N18°24'18"W
L13	38.50'	S85°25'38"E
L14	38.50'	S83°20'15"E
L15	22.00'	S82°01'11"E
L16	38.50'	N4°39'05"E

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	23.64'	676.25'	2° 00' 10"	N12° 32' 56"E	23.64'
C2	32.92'	25.00'	75° 27' 25"	N49° 16' 34"E	30.60'
C3	17.73'	10.00'	101° 35' 53"	S42° 11' 47"E	15.50'
C4	100.65'	264.25'	21° 49' 23"	S36° 37' 31"W	100.04'
C5	106.35'	264.25'	23° 03' 35"	S59° 04' 00"W	105.64'
C6	92.49'	239.25'	22° 08' 58"	S81° 40' 16"W	91.91'
C7	126.63'	239.25'	30° 19' 35"	N72° 05' 27"W	125.16'
C8	81.46'	239.25'	19° 30' 25"	N47° 10' 27"W	81.06'
C9	103.03'	239.25'	24° 40' 24"	S82° 55' 59"W	102.23'
C10	90.98'	1164.25'	4° 28' 38"	N4° 57' 30"W	90.95'
C11	27.61'	419.25'	3° 46' 21"	S88° 21' 01"W	27.60'
C12	86.41'	419.25'	11° 48' 33"	N83° 51' 32"W	86.26'
C13	77.39'	419.25'	10° 34' 36"	N72° 39' 57"W	77.28'
C14	61.38'	269.25'	13° 03' 45"	S71° 23' 39"E	61.25'
C15	58.63'	269.25'	12° 28' 33"	S84° 09' 48"E	58.51'
C16	14.73'	269.25'	3° 08' 05"	N88° 01' 53"E	14.73'

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C17	34.25'	20.00'	98° 06' 32"	S44° 28' 54"E	30.21'
C18	10.53'	980.75'	0° 36' 55"	N4° 52' 49"E	10.53'
C19	28.91'	20.00'	82° 49' 16"	N46° 35' 55"E	26.46'
C20	129.78'	2401.61'	3° 05' 46"	N89° 33' 26"E	129.76'
C21	125.36'	2401.61'	2° 59' 27"	S87° 23' 58"E	125.35'
C22	32.31'	20.00'	92° 33' 59"	S39° 37' 15"E	28.91'
C23	2.29'	650.25'	0° 12' 07"	N6° 45' 49"E	2.29'
C24	31.11'	20.00'	89° 07' 15"	N51° 25' 30"E	28.07'
C25	61.03'	2401.61'	1° 27' 22"	S83° 17' 11"E	61.03'
C26	44.25'	1911.02'	1° 19' 36"	S83° 13' 18"E	44.24'
C27	16.03'	10.00'	91° 51' 54"	S37° 57' 09"E	14.37'
C28	1.87'	493.25'	0° 13' 00"	N8° 05' 19"E	1.87'
C29	15.13'	10.00'	86° 39' 51"	N51° 31' 44"E	13.72'
C30	6.99'	1911.02'	0° 12' 34"	S85° 14' 37"E	6.99'
C31	17.26'	10.00'	98° 53' 56"	N35° 53' 57"W	15.20'

JOEY C. WILSON II
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 2089

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

SOUTHERN LAND COMPANY

WESTHAVEN

PUD SUBDIVISION, FINAL PLAT, SECTION 63

RECORDING STAMP HERE

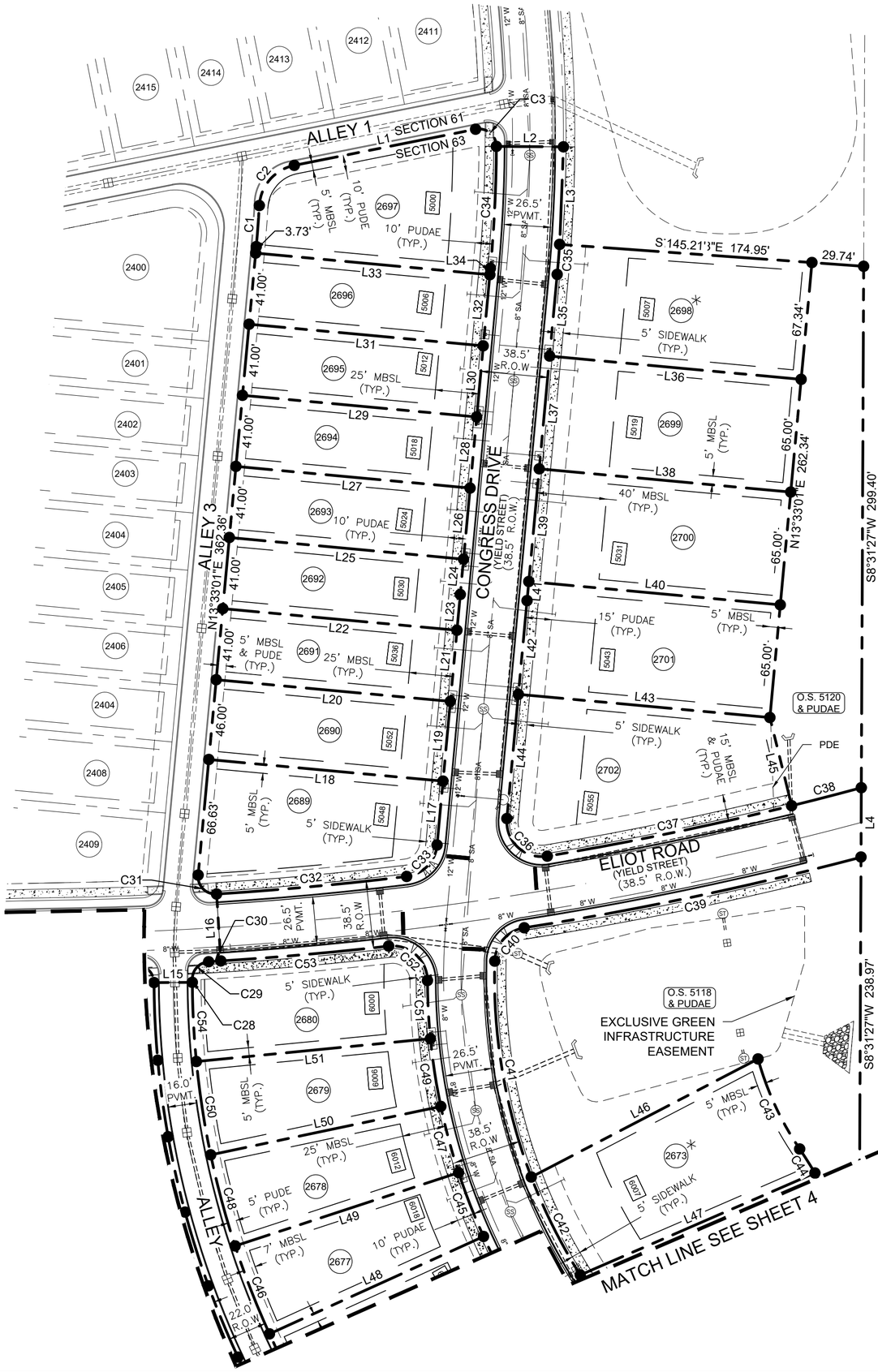
IF YOU CAN READ THIS YOU ARE HOLDING AN UNRECORDED COPY

FINAL SUBDIVISION PLAT

FRANKLIN - WILLIAMSON COUNTY - TENNESSEE

TOTAL ACRES:	16.789	TOTAL NO. OF LOTS:	63
ACRES NEW RD/ST:	2.422 (ROW)	L.F. OF NEW RD/ST:	2571.74
ACRES OPEN SPACE:	0.936	CIVIL DISTRICT:	5TH
DRAWN BY:	AS	CLOSURE ERROR:	SEE NOTE
SCALE:	1" = 150'	DATE:	06/01/2023

WA PROJECT NO. 20-1478 COF PROJECT NO. 8190 SHEET 2 0F 6



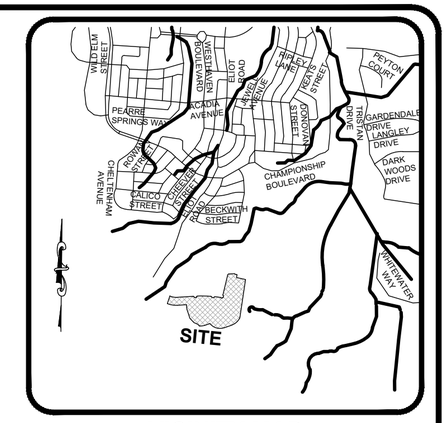
GRAPHIC SCALE: 1" = 50'

Lot Line Table		
Line #	Length	Direction
L1	106.11'	N87°00'16"E
L2	38.50'	S81°23'50"E
L3	56.07'	S10°29'36"W
L4	39.90'	S8°31'27"W
L15	22.00'	S82°01'11"E
L16	38.50'	N4°39'05"E
L17	36.86'	S13°33'01"W
L18	135.00'	N76°26'59"W
L19	46.00'	S13°33'01"W
L20	135.00'	N76°26'59"W
L21	41.00'	S13°33'01"W
L22	135.00'	N76°26'59"W
L23	20.66'	S13°33'01"W
L24	20.34'	S13°33'01"W
L25	135.00'	N76°26'59"W
L26	41.00'	S13°33'01"W
L27	135.00'	N76°26'59"W
L28	41.00'	S13°33'01"W
L29	135.00'	N76°26'59"W
L30	41.00'	S13°33'01"W
L31	135.00'	N76°26'59"W

Lot Line Table		
Line #	Length	Direction
L32	41.00'	S13°33'01"W
L33	135.00'	N76°26'59"W
L34	3.73'	S13°33'01"W
L35	47.09'	N13°33'01"E
L36	145.00'	S76°26'59"E
L37	65.00'	N13°33'01"E
L38	145.00'	S76°26'59"E
L39	65.00'	N13°33'01"E
L40	145.00'	S76°26'59"E
L41	10.98'	N13°33'01"E
L42	54.02'	N13°33'01"E
L43	145.00'	S76°26'59"E
L44	71.65'	N13°33'01"E
L45	52.15'	S5°34'53"E
L46	146.78'	N70°45'27"E
L47	146.85'	N74°46'21"E
L48	135.00'	S73°48'01"W
L49	135.00'	S80°05'50"W
L50	135.00'	S86°23'38"W
L51	135.00'	N87°18'33"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	23.64'	676.25'	2° 00' 10"	N12° 32' 56"E	23.64'
C2	32.92'	25.00'	75° 27' 25"	N49° 16' 34"E	30.60'
C3	17.73'	10.00'	101° 35' 53"	S42° 11' 47"E	15.50'
C28	1.87'	493.25'	0° 13' 00"	N8° 05' 19"E	1.87'
C29	15.13'	10.00'	86° 39' 51"	N51° 31' 44"E	13.72'
C30	6.99'	1911.02'	0° 12' 34"	S85° 14' 37"E	6.99'
C31	17.26'	10.00'	98° 53' 56"	N35° 53' 57"W	15.20'
C32	109.57'	1872.52'	3° 21' 10"	N87° 01' 29"W	109.56'
C33	27.14'	20.00'	77° 44' 54"	S52° 25' 29"W	25.10'
C34	70.05'	811.25'	4° 56' 52"	S11° 04' 36"W	70.03'
C35	17.30'	849.75'	1° 10' 00"	N12° 58' 02"E	17.30'
C36	36.56'	20.00'	104° 44' 55"	N38° 49' 26"W	31.68'
C37	143.25'	1872.52'	4° 22' 59"	S86° 36' 36"W	143.21'
C38	41.31'	1872.52'	1° 15' 51"	S83° 47' 11"W	41.31'
C39	197.62'	1911.02'	5° 55' 30"	N86° 26' 02"E	197.53'

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C40	27.71'	20.00'	79° 23' 15"	N49° 42' 10"E	25.55'
C41	126.54'	319.75'	22° 40' 29"	N1° 19' 42"W	125.72'
C42	62.98'	319.75'	11° 17' 09"	N18° 18' 31"W	62.88'
C43	57.20'	175.00'	18° 43' 43"	S16° 31' 23"E	56.95'
C44	16.33'	264.00'	3° 32' 41"	S24° 08' 10"E	16.33'
C45	39.37'	358.25'	6° 17' 49"	N13° 03' 04"W	39.35'
C46	54.21'	493.25'	6° 17' 49"	S13° 03' 05"E	54.18'
C47	39.37'	358.25'	6° 17' 48"	N6° 45' 16"W	39.35'
C48	54.21'	493.25'	6° 17' 49"	S6° 45' 16"E	54.18'
C49	39.37'	358.25'	6° 17' 49"	N0° 27' 27"W	39.35'
C50	54.21'	493.25'	6° 17' 49"	S0° 27' 27"E	54.18'
C51	33.43'	358.25'	5° 20' 50"	N5° 21' 52"E	33.42'
C52	33.61'	20.00'	96° 17' 14"	N40° 06' 19"W	29.79'
C53	96.74'	1911.02'	2° 54' 02"	N86° 47' 55"W	96.73'
C54	45.53'	493.25'	5° 17' 21"	S5° 20' 08"W	45.52'



VICINITY MAP

NOT TO SCALE

NOTE:

ALL LOTS IN THIS SECTION NOTED WITH AN ASTERISK (*) REQUIRE A CRITICAL LOT SITE PLAN WITH THE BUILDING PERMIT SUBMITTAL

JOEY C. WILSON II
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 2089

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

SOUTHERN LAND COMPANY
WESTHAVEN
PUD SUBDIVISION, FINAL PLAT, SECTION 63

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FINAL SUBDIVISION PLAT

FRANKLIN - WILLIAMSON COUNTY - TENNESSEE

TOTAL ACRES:	16.789	TOTAL NO. OF LOTS:	63
ACRES NEW RD/ST:	2.422 (ROW)	L.F. OF NEW RD/ST:	2571.74
ACRES OPEN SPACE:	0.936	CIVIL DISTRICT:	5TH
DRAWN BY:	AS	CLOSURE ERROR:	SEE NOTE
SCALE:	1" = 50'	DATE:	06/01/2023

WA PROJECT NO. 20-1478 COF PROJECT NO. 8190 SHEET 3 0F 6

NOTE:
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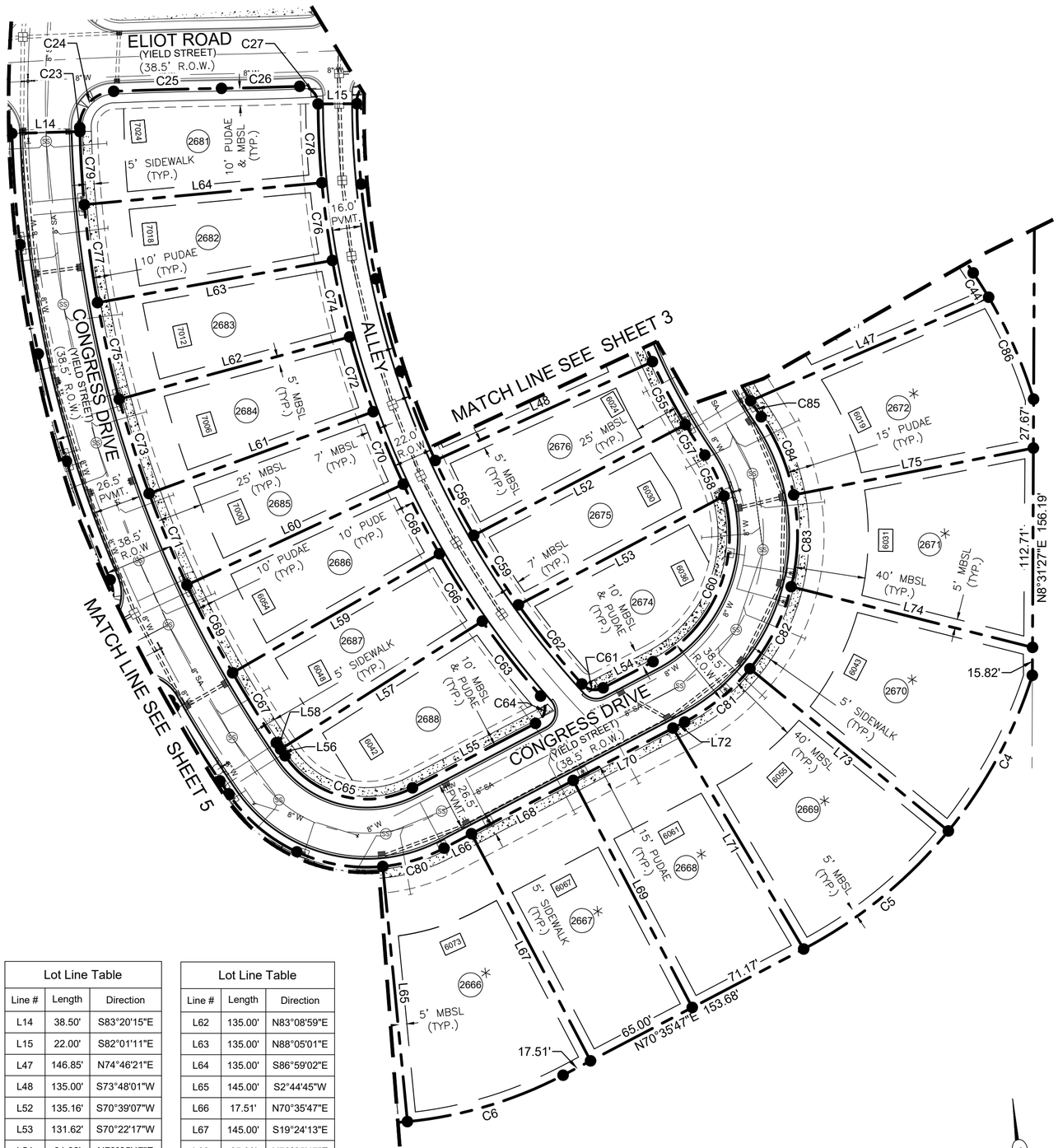

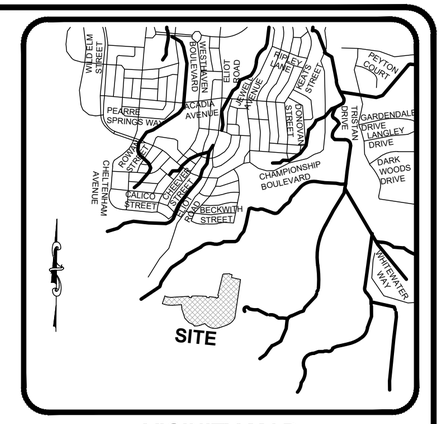

VICINITY MAP
NOT TO SCALE

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C4	100.65'	264.25'	21° 49' 23"	S36° 37' 31"W	100.04'
C5	106.35'	264.25'	23° 03' 35"	S59° 04' 00"W	105.64'
C6	92.49'	239.25'	22° 08' 58"	S81° 40' 16"W	91.91'
C23	2.29'	650.25'	0° 12' 07"	N6° 45' 49"E	2.29'
C24	31.11'	20.00'	89° 07' 15"	N51° 25' 30"E	28.07'
C25	61.03'	2401.61'	1° 27' 22"	S83° 17' 11"E	61.03'
C26	44.25'	1911.02'	1° 19' 36"	S83° 13' 18"E	44.24'
C27	16.03'	10.00'	91° 51' 54"	S37° 57' 09"E	14.37'
C44	16.33'	264.00'	3° 32' 41"	S24° 08' 10"E	16.33'
C55	40.20'	358.25'	6° 25' 44"	N19° 24' 50"W	40.18'
C56	47.61'	493.25'	5° 31' 49"	S18° 57' 54"E	47.59'
C57	20.46'	358.25'	3° 16' 20"	N24° 15' 52"W	20.46'
C58	25.68'	80.75'	18° 13' 08"	N16° 47' 28"W	25.57'
C59	46.77'	493.25'	5° 25' 59"	S24° 26' 48"E	46.75'
C60	110.32'	80.75'	78° 16' 42"	N31° 27' 26"E	101.94'
C61	13.19'	10.00'	75° 34' 12"	S71° 37' 07"E	12.25'
C62	57.43'	493.25'	6° 40' 14"	S30° 29' 54"E	57.39'
C63	53.75'	515.25'	5° 58' 37"	N29° 40' 09"W	53.72'
C64	18.02'	10.00'	103° 15' 15"	N18° 58' 10"E	15.68'
C65	81.38'	55.75'	83° 38' 16"	S67° 35' 05"E	74.35'
C66	45.20'	515.25'	5° 01' 33"	N24° 10' 04"W	45.18'

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C67	46.65'	650.25'	4° 06' 39"	S23° 42' 37"E	46.64'
C68	44.38'	515.25'	4° 56' 06"	N19° 11' 15"W	44.36'
C69	56.01'	650.25'	4° 56' 06"	S19° 11' 15"E	55.99'
C70	44.38'	515.25'	4° 56' 06"	N14° 15' 09"W	44.36'
C71	56.01'	650.25'	4° 56' 06"	S14° 15' 09"E	55.99'
C72	44.38'	515.25'	4° 56' 06"	N9° 19' 04"W	44.37'
C73	56.01'	650.25'	4° 56' 06"	S9° 19' 04"E	55.99'
C74	44.37'	515.25'	4° 56' 02"	N4° 23' 00"W	44.35'
C75	55.99'	650.25'	4° 56' 02"	S4° 23' 00"E	55.98'
C76	44.36'	515.25'	4° 55' 57"	N0° 32' 59"E	44.34'
C77	55.98'	650.25'	4° 55' 57"	S0° 32' 59"W	55.96'
C78	44.64'	515.25'	4° 57' 51"	N5° 29' 53"E	44.63'
C79	41.38'	650.25'	3° 38' 47"	S4° 50' 21"W	41.38'
C80	36.44'	94.25'	22° 08' 58"	N81° 40' 16"E	36.21'
C81	47.99'	119.25'	23° 03' 35"	N59° 04' 00"E	47.67'
C82	52.35'	119.25'	25° 09' 16"	N34° 57' 35"E	51.93'
C83	52.35'	119.25'	25° 09' 16"	N9° 48' 19"E	51.93'
C84	48.14'	119.25'	23° 07' 43"	N14° 20' 11"W	47.81'
C85	10.88'	319.75'	1° 56' 57"	N24° 55' 34"W	10.88'
C86	63.16'	264.00'	13° 42' 27"	S15° 30' 36"E	63.01'

Lot Line Table		
Line #	Length	Direction
L14	38.50'	S83°20'15"E
L15	22.00'	S82°01'11"E
L47	146.85'	N74°46'21"E
L48	135.00'	S73°48'01"W
L52	135.16'	S70°39'07"W
L53	131.62'	S70°22'17"W
L54	31.82'	N70°35'47"E
L55	78.60'	N70°35'47"E
L56	4.49'	S25°45'57"E
L57	135.12'	N65°52'35"E
L58	4.36'	S25°45'57"E
L59	135.00'	N68°20'42"E
L60	135.00'	N73°16'48"E
L61	135.00'	N78°12'53"E

Lot Line Table		
Line #	Length	Direction
L62	135.00'	N83°08'59"E
L63	135.00'	N88°05'01"E
L64	135.00'	S86°59'02"E
L65	145.00'	S2°44'45"W
L66	17.51'	N70°35'47"E
L67	145.00'	S19°24'13"E
L68	65.00'	N70°35'47"E
L69	145.00'	S19°24'13"E
L70	63.71'	N70°35'47"E
L71	145.19'	S22°20'50"E
L72	7.46'	N70°35'47"E
L73	145.00'	S42°27'47"E
L74	140.77'	S67°37'03"E
L75	138.18'	N87°13'41"E

GRAPHIC SCALE: 1" = 50'

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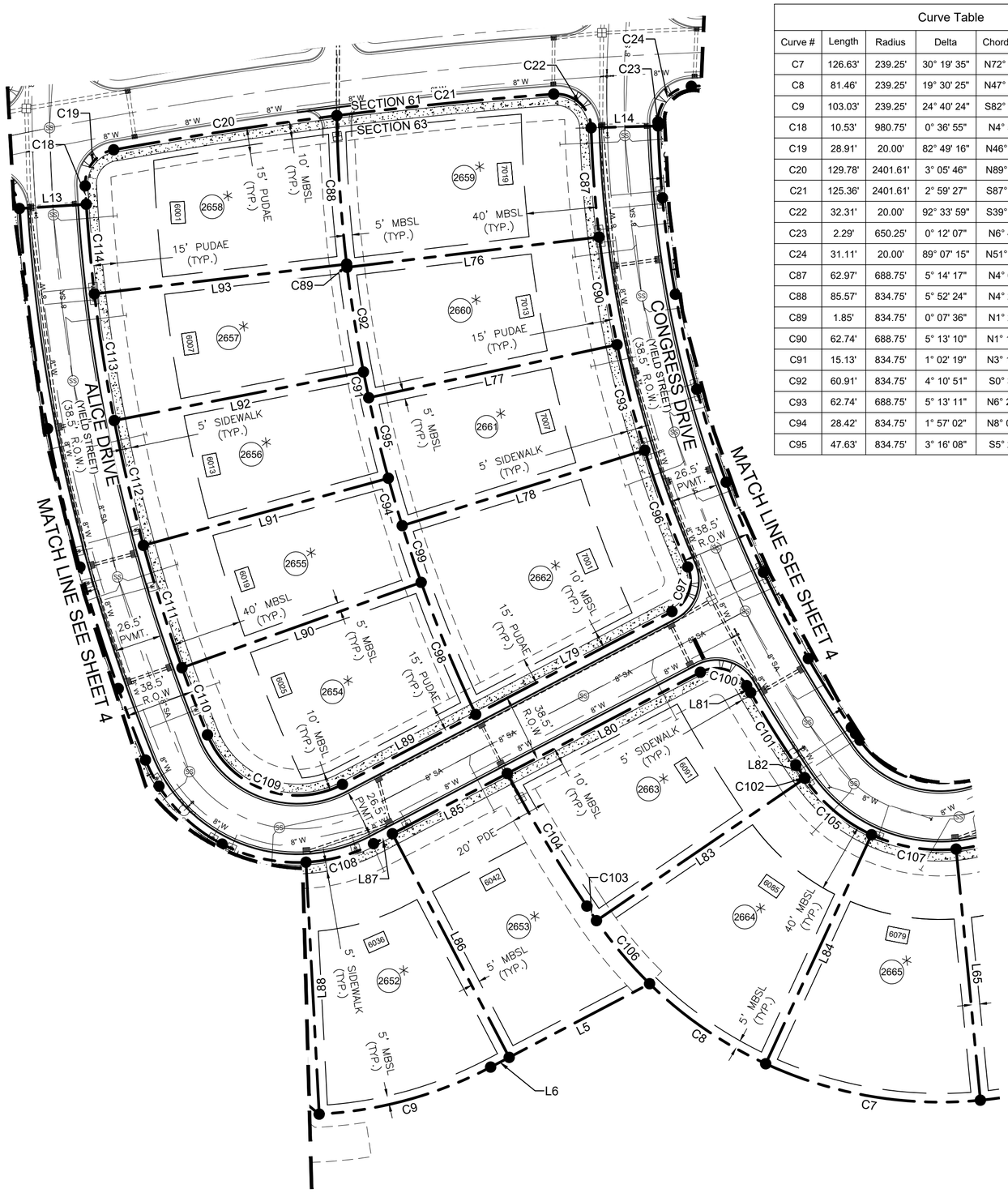
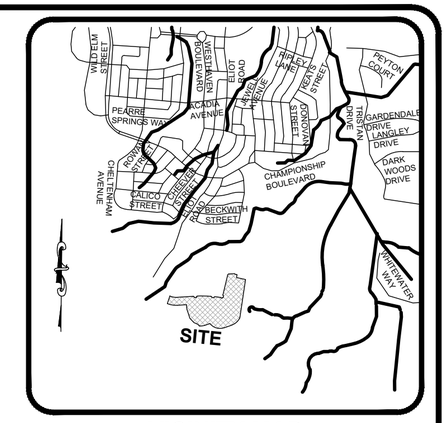
WA PROJECT NO. 20-1478 COF PROJECT NO. 8190 SHEET 4 0F 6



Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C7	126.63'	239.25'	30° 19' 35"	N72° 05' 27"W	125.16'
C8	81.46'	239.25'	19° 30' 25"	N47° 10' 27"W	81.06'
C9	103.03'	239.25'	24° 40' 24"	S82° 55' 59"W	102.23'
C18	10.53'	980.75'	0° 36' 55"	N4° 52' 49"E	10.53'
C19	28.91'	20.00'	82° 49' 16"	N46° 35' 55"E	26.46'
C20	129.78'	2401.61'	3° 05' 46"	N89° 33' 26"E	129.76'
C21	125.36'	2401.61'	2° 59' 27"	S87° 23' 58"E	125.35'
C22	32.31'	20.00'	92° 33' 59"	S39° 37' 15"E	28.91'
C23	2.29'	650.25'	0° 12' 07"	N6° 45' 49"E	2.29'
C24	31.11'	20.00'	89° 07' 15"	N51° 25' 30"E	28.07'
C87	62.97'	688.75'	5° 14' 17"	N4° 02' 37"E	62.95'
C88	85.57'	834.75'	5° 52' 24"	N4° 29' 16"E	85.53'
C89	1.85'	834.75'	0° 07' 36"	N1° 29' 16"E	1.85'
C90	62.74'	688.75'	5° 13' 10"	N1° 11' 07"W	62.72'
C91	15.13'	834.75'	1° 02' 19"	N3° 16' 33"W	15.13'
C92	60.91'	834.75'	4° 10' 51"	S0° 39' 58"E	60.90'
C93	62.74'	688.75'	5° 13' 11"	N6° 24' 18"W	62.72'
C94	28.42'	834.75'	1° 57' 02"	N8° 02' 22"W	28.42'
C95	47.63'	834.75'	3° 16' 08"	S5° 25' 47"E	47.62'

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C96	71.55'	688.75'	5° 57' 08"	N11° 59' 27"W	71.52'
C97	29.87'	20.00'	85° 33' 49"	N27° 48' 53"E	27.17'
C98	82.18'	834.75'	5° 38' 27"	N14° 11' 31"W	82.15'
C99	34.34'	834.75'	2° 21' 25"	S10° 11' 35"E	34.33'
C100	30.59'	20.00'	87° 37' 21"	S65° 35' 32"E	27.69'
C101	49.01'	688.75'	4° 04' 38"	S23° 43' 38"E	49.00'
C102	0.46'	94.25'	0° 16' 57"	S25° 54' 25"E	0.46'
C103	10.03'	249.32'	2° 18' 20"	S25° 14' 21"E	10.03'
C104	88.91'	833.75'	6° 06' 35"	S22° 42' 39"E	88.86'
C105	50.80'	94.25'	30° 52' 45"	S41° 29' 17"E	50.18'
C106	47.49'	249.32'	10° 54' 49"	S31° 50' 56"E	47.42'
C107	49.89'	94.25'	30° 19' 35"	S72° 05' 27"E	49.31'
C108	40.59'	94.25'	24° 40' 24"	N82° 55' 59"E	40.27'
C109	93.04'	55.75'	95° 37' 10"	S61° 35' 38"E	82.61'
C110	41.30'	980.75'	2° 24' 45"	S12° 34' 40"E	41.29'
C111	73.73'	980.75'	4° 18' 27"	S9° 13' 04"E	73.71'
C112	73.73'	980.75'	4° 18' 27"	S4° 54' 37"E	73.72'
C113	73.74'	980.75'	4° 18' 28"	S0° 36' 10"E	73.72'
C114	51.72'	980.75'	3° 01' 18"	S3° 03' 43"W	51.71'



VICINITY MAP
NOT TO SCALE

NOTE:
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Lot Line Table		
Line #	Length	Direction
L5	91.13'	S70°35'47"W
L6	12.05'	S70°35'47"W
L13	38.50'	S85°25'38"E
L14	38.50'	S83°20'15"E
L65	145.00'	S2°44'45"W
L76	146.00'	N88°34'32"W
L77	146.00'	S86°12'18"W
L78	146.00'	S80°59'07"W
L79	127.40'	N70°35'47"E
L80	125.37'	N70°35'47"E
L81	4.62'	S21°46'52"E
L82	8.85'	S25°45'57"E

Lot Line Table		
Line #	Length	Direction
L83	145.10'	S63°57'06"W
L84	145.00'	S33°04'21"W
L85	74.51'	N70°35'47"E
L86	145.00'	S19°18'13"E
L87	12.30'	N70°35'47"E
L88	145.00'	S5°16'11"W
L89	86.53'	N70°35'47"E
L90	146.00'	S78°37'42"W
L91	146.00'	S82°56'09"W
L92	146.00'	S87°14'36"W
L93	146.00'	N88°26'56"W

50 0 25 50 100
GRAPHIC SCALE: 1" = 50'

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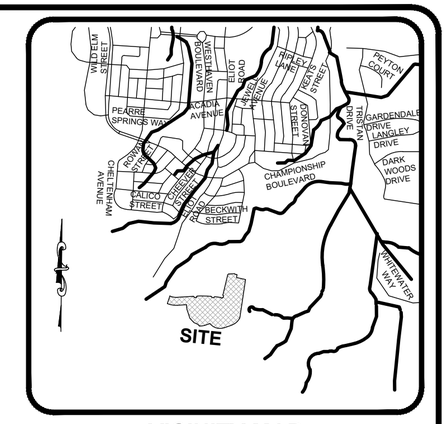
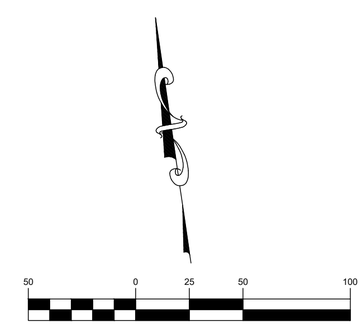


VICINITY MAP
NOT TO SCALE

Lot Line Table		
Line #	Length	Direction
L7	47.35'	N42°43'27"W
L8	76.39'	N67°24'56"W
L9	113.16'	N43°10'45"W
L10	1.19'	N18°01'28"W
L11	89.49'	N18°01'28"W
L12	84.21'	N18°24'18"W
L13	38.50'	S85°25'38"E
L88	145.00'	S5°16'11"W
L94	119.88'	S35°35'44"W
L95	127.48'	S65°55'19"W
L96	131.60'	S78°41'13"W
L97	145.00'	S82°48'11"W
L98	77.95'	S86°27'50"W
L99	150.00'	S3°29'14"E
L100	65.01'	S86°27'50"W
L101	2.06'	S86°27'50"W
L102	150.00'	S3°32'10"E
L103	150.00'	S3°32'10"E
L104	150.00'	S3°19'05"E
L105	150.05'	S1°22'53"W
L106	150.00'	S11°59'40"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C10	90.98'	1164.25'	4° 28' 38"	N4° 57' 30"W	90.95'
C11	27.61'	419.25'	3° 46' 21"	S88° 21' 01"W	27.60'
C12	86.41'	419.25'	11° 48' 33"	N83° 51' 32"W	86.26'
C13	77.39'	419.25'	10° 34' 36"	N72° 39' 57"W	77.28'
C14	61.38'	269.25'	13° 03' 45"	S71° 23' 39"E	61.25'
C15	58.63'	269.25'	12° 28' 33"	S84° 09' 48"E	58.51'
C16	14.73'	269.25'	3° 08' 05"	N88° 01' 53"E	14.73'
C17	34.25'	20.00'	98° 06' 32"	S44° 28' 54"E	30.21'
C18	10.53'	980.75'	0° 36' 55"	N4° 52' 49"E	10.53'
C19	28.91'	20.00'	82° 49' 16"	N46° 35' 55"E	26.46'
C115	49.89'	94.25'	30° 19' 33"	S69° 34' 02"E	49.30'
C116	49.89'	94.25'	30° 19' 35"	S39° 14' 28"E	49.31'
C117	16.93'	94.25'	10° 17' 38"	S18° 55' 52"E	16.91'
C118	43.96'	1019.25'	2° 28' 16"	S12° 32' 55"E	43.96'
C119	73.22'	1019.25'	4° 06' 58"	S9° 15' 18"E	73.21'
C120	81.71'	1019.25'	4° 35' 36"	S4° 54' 01"E	81.69'
C121	127.66'	1019.25'	7° 10' 34"	S0° 59' 05"W	127.58'



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WESTHAVEN

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WA PROJECT NO. 20-1478 COF PROJECT NO. 8190 SHEET 6 0F 6

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04780

DATE: June 6, 2023

TO: Franklin Municipal Planning Commission

FROM: Emily Wright, Director of Planning and Sustainability
Amy Diaz-Barriga, Asst Director of Planning Development
Chelsea Randolph, Principal Planner

SUBJECT:

Westhaven PUD Subdivision, Final Plat, Westhaven Golf Club, Revision 1, Creating One Lot And Revising Easements, On 61.695 Acres, Located Near The Intersection Of Boyd Mille Pike And Golf Club Lane, at 4000 Golf Club Lane. (CONSENT AGENDA)

PURPOSE:

PROJECT INFORMATION
COF Project Number: 8073
Applicant: Abigail Overstreet, Wilson and Associates
Owner: Westhaven Golf Club, LLC and Westhaven Owner LP, Rep. Brian Sewell

BACKGROUND/STAFF COMMENTS:
This final plat creates one recreational lot and revises easements within the Westhaven PUD Subdivision on the Westhaven Gold Club. The corresponding site plan was approved on the March 2023 Administrative agenda, and both the final plat and the site plan are consistent with the development plan. The creation of new lots on this final plat requires approval by the Franklin Municipal Planning Commission.

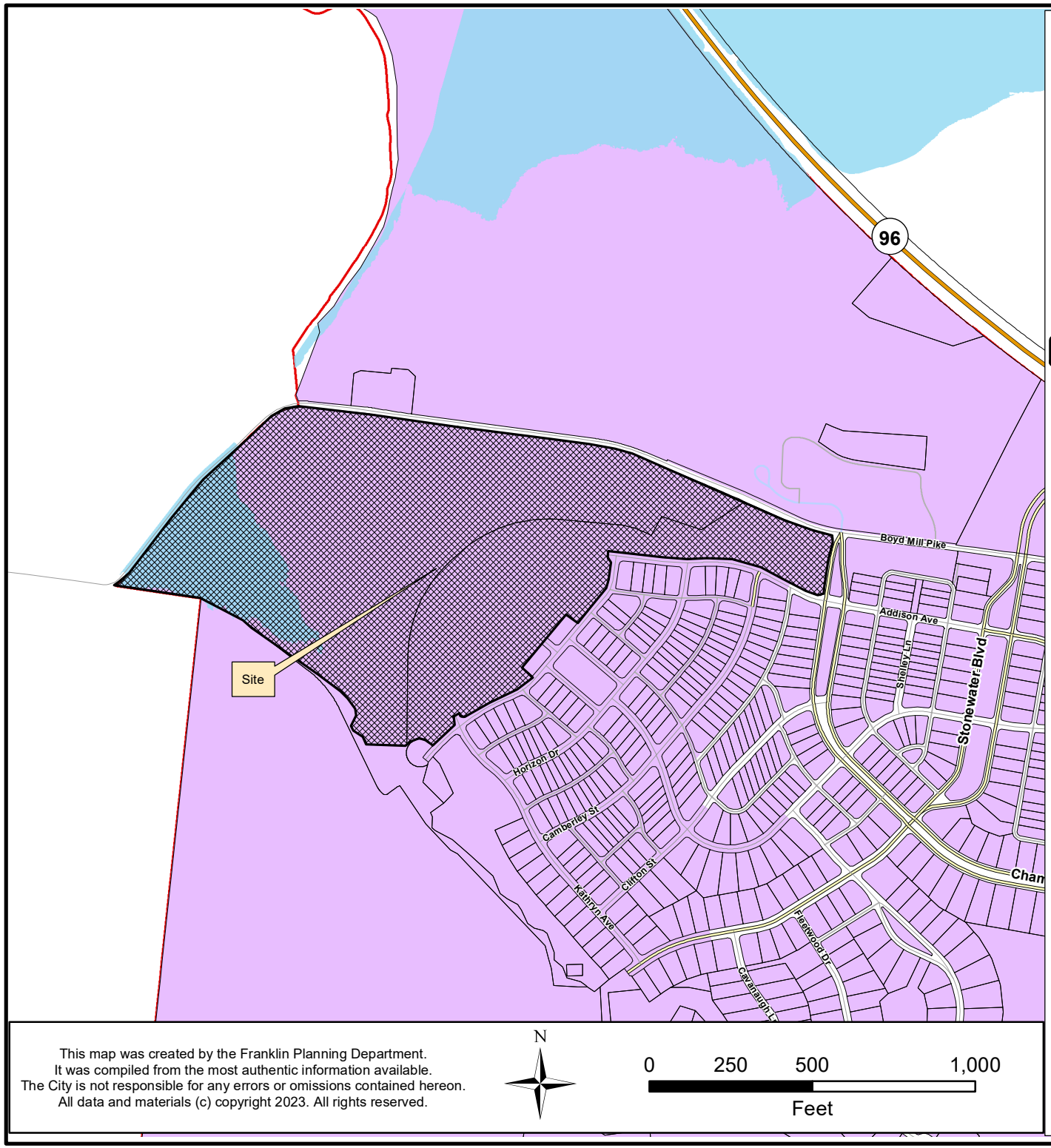
PROCEDURAL REQUIREMENTS:
1. In addition to uploading the corrected plat to the online plan review website (https://franklin.contractorsplanroom.com/secure/), the applicant shall submit the Mylar, to the Department of Building and Neighborhood Services (Suite 110, Franklin City Hall).
2. The mylar shall be 18 inches by 24 inches in size. The Certificates of Approval for the Subdivision Name and Street Names, Water System (if not COF Water), Survey, and Ownership shall be signed when the plat is resubmitted. The Mylar shall be submitted to BNS within five (5) business days of the corrected electronic plat being uploaded to the online plan review website (or vice versa) or the item shall be rejected as incomplete for City review. With the resubmittal, each condition of approval/open issue in the online plan review system shall contain a full response from the applicant as to the satisfaction or completion of that condition.
3. The city's project identification number shall be included on all correspondence with any city department relative to this project.

FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff recommends approval with conditions of Westhaven PUD Subdivision, Final Plat, Westhaven Gold Club, Revision 1. The conditions are attached.



WESTHAVEN PUD SUBDIVISION, WESTHAVEN GOLF CLUB, REVISION 1

Project Information

Zoning: PD, Planned District
Overlay Districts: Floodway Fringe Overlay
Site Acreage: 61.695 acres
Total Number of Lots: 2

Legend

- Westhaven PUD Subdivision, Westhaven Golf Club
- Floodway Fringe Overlay
- AG Agricultural District
- ER Estate Residential District
- R1 Residential 1 District
- R2 Residential 2 District
- R3 Residential 3 District
- R4 Residential 4 District
- R6 Residential 6 District
- MR Mixed Residential District
- PD Planned District
- OR Office Residential District
- CI Civic Institutional District
- NC Neighborhood Commercial
- CC Central Commercial District
- DD Downtown District
- 1ST Avenue District
- 5TH Avenue District
- RC6 Regional Commerce 6 District
- RC12 Regional Commerce 12 District
- GO General Office District
- LI Light Industrial District
- HI Heavy Industrial District

This map was created by the Franklin Planning Department.
It was compiled from the most authentic information available.
The City is not responsible for any errors or omissions contained hereon.
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N

0 250 500 1,000
Feet

HISTORIC FRANKLIN TENNESSEE

COF no: 8073

CONDITIONS OF APPROVAL:

Open Issues: 7 These issues are currently being filtered

Engineering - Final Plat Checklist

General Issues

7. C. Final Plat

lance.fittro@franklintn.gov Applicant shall ensure that any changes to Site Plan COF#8038, which is being reviewed concurrently with this Final Plat, are reflected on the Final Plat. The Plat shall match the Site Plan.

16. C. Final Plat

lance.fittro@franklintn.gov Applicant shall update Certificate of Ownership to include information for the added open space Lot 5121 (Deed Book 8509 Page 336) which County records indicate being owned by Westhaven Owner LP. In the event the parcel has recently transferred to Westhaven Golf Club, LLC as indicated in the Certificate of Ownership, Applicant shall provide documentation of the transfer for verification.

Performance Agreement and Surety

General Issues

1. Engineering Sureties

kevin.long@franklintn.gov Any unposted sureties associated with this development from site plan: **COF #8038 (Westhaven PUD Subdivision, Site Plan, Golf Course Maintenance Facility)** shall be transferred to this final plat as a condition of approval.

(This comment serves only as a reminder to staff and does not hinder approval. No response is necessary from the applicant beyond "N/A" or "Acknowledged" to satisfy requirements of the IDT system.)

Planning

General Issues

15. Signature Blocks

chelsea.randolph@franklintn.gov The applicant shall update the ownership signature block to match the provided owner affidavit with the representative for the LLC in parenthesis behind the name of the LLC.

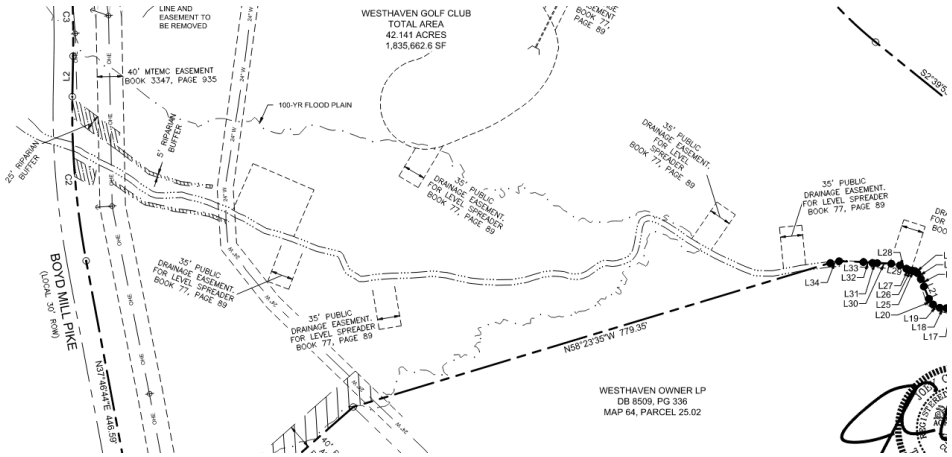
In addition, a ownership signature block must be added for the representative of "WESTHAVEN OWNER LP".

Stormwater

General Issues

10. Riparian Buffer

jeff.willoughby@franklintn.gov Riparian buffers are not shown in their entirety.



Water/Sewer

General Issues

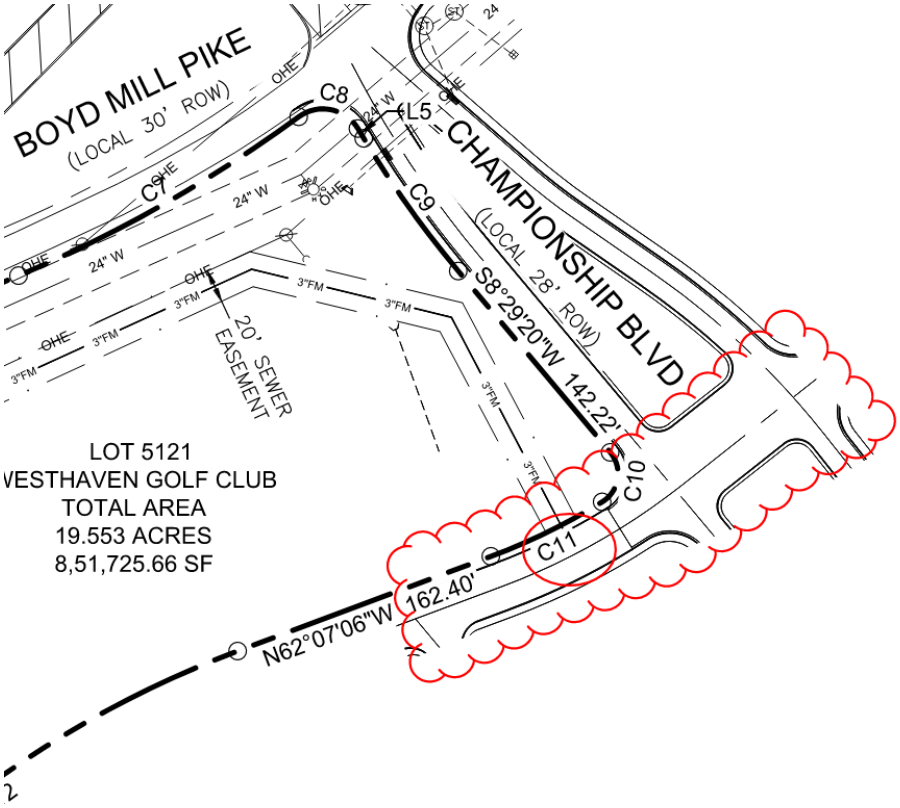
9. Force main easement

scott.andrews@franklintn.gov The applicant shall label the proposed force main easement on each sheet. The sewer easement for future extension to Boyd Mill shall also be labeled. 20' minimum easement width.

[Edited By Ben McNeil]

17. Sanitary sewer

ben.mcneil@franklintn.gov The applicant must include the existing sanitary sewer along Championship way.

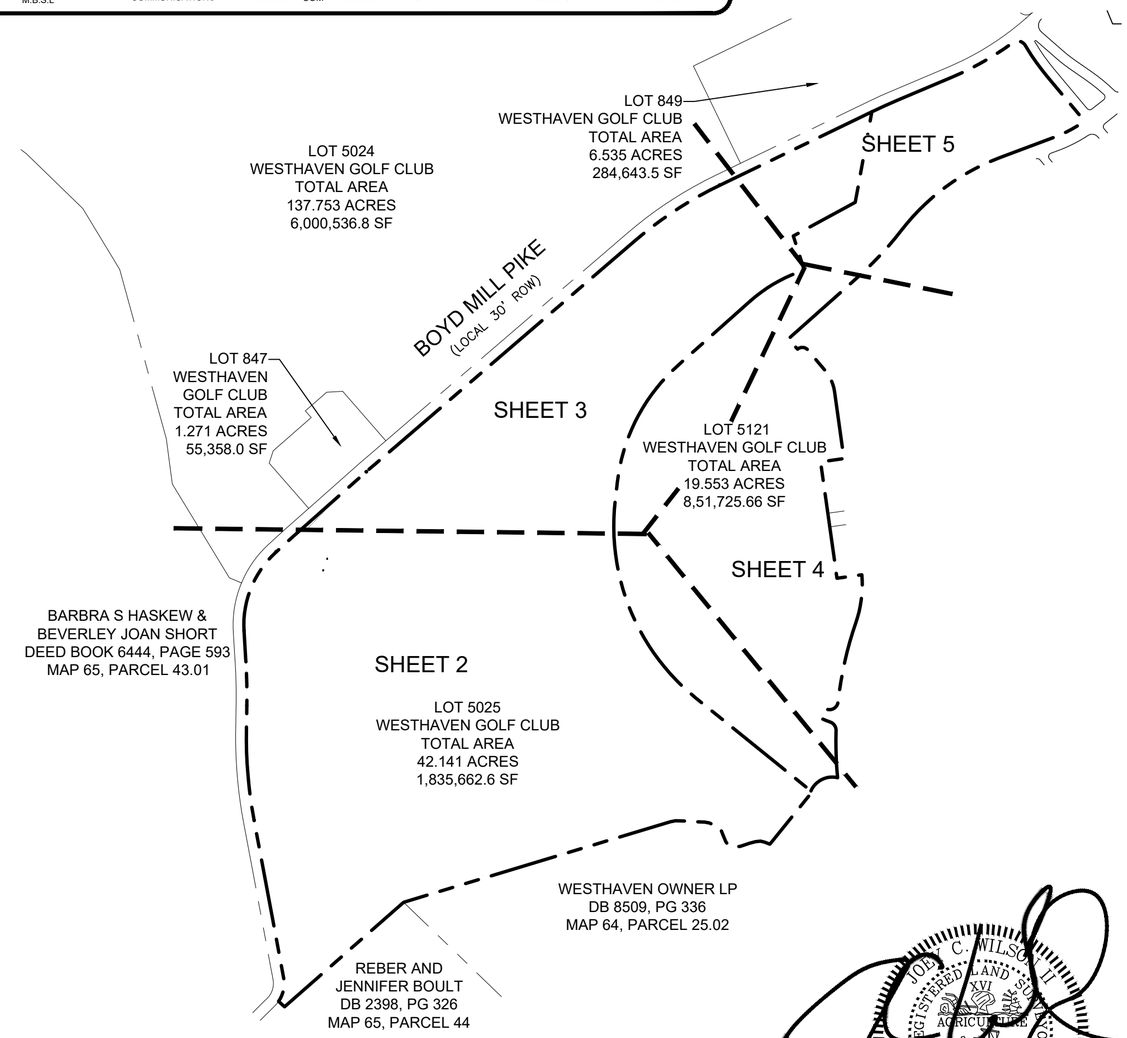


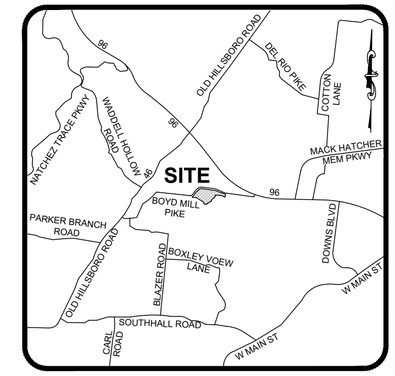
LEGEND

IRON PIN FOUND		FIRE HYDRANT		UTILITY POLE		PUBLIC UTIL. & DRAIN ESMT.	P.U.D.E.		BOUNDARY		
IRON PIN SET		SANITARY SEWER MH	SS	GUY ANCHOR		ADDRESSES	1234		CENTERLINE		
CONC. MON. FOUND		SANITARY SEWER CO	SO	COMMUNICATION BOX	C	HANDICAP SPACE			BUFFER		
CONC. MON. SET		AREA DRAIN		COMMUNICATION MH	C	SANITARY SEWER	8" SA		WATER FEATURE		
CONTROL POINT FOUND		CURB INLET		GAS METER	G	WATER	4" W		TREE LINE		
CONTROL POINT SET		STORM MH	ST	GAS VALVE		UNDERGROUND ELEC	UGE		MATCH LINE		
BENCH MARK		ELECTRIC METER-BOX	E	EVERGREEN TREE		OVERHEAD ELEC	OHE		R.O.W.	RIGHT OF WAY	
WATER METER	W	ELECTRIC MH	E	SIDEWALK		GAS	4" G		PVMT.	EDGE OF PAVEMENT	
WATER VALVE		LIGHT POLE		MIN. BUIDLING SETBACK	M.B.S.L	COMMUNICATIONS	COM		PUDE	PUBLIC UTILITY AND DRAINAGE EASEMENT	

PLAT NOTES

1. THE PURPOSE OF THIS PLAT IS TO REVISE THE EASEMENTS WITHIN LOT 5025 AND ESTABLISH LOT 5121 OF THE WESTHAVEN GOLF CLUB, LLC.
2. THE RECORDING OF THIS PLAT VOIDS, VACATES, AND SUPERCEDES THE PREVIOUS RECORDING OF LOT 5205 SHOWN ON THE FINAL PLAT ENTITLED "WESTHAVEN GOLF CLUB" AS RECORDED IN PLAT BOOK 77, PAGE 89A, R.O.W.C."
3. BEARINGS SHOWN HEREON ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83). ELEVATIONS SHOWN HEREON ARE BASED ON NAVD88.
4. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES WITHIN ZONE "X" AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47187C0195F, WITH AN EFFECTIVE DATE OF SEPTEMBER 28, 2006, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE PROGRAM. ZONE "X" IS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
5. I HEREBY CERTIFY THAT THIS IS A CATEGORY IV SURVEY AND WAS CONDUCTED IN ACCORDANCE WITH RULE 0820-03.11 (GLOBAL POSITION SYSTEMS SURVEYS) ACCORDING TO THE CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE AS PROMULGATED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS. THIS SURVEY WAS CONDUCTED WITH DUAL-FREQUENCY RTK GPS EQUIPMENT BASED ON THE TDOT CORPS NETWORK.
   a. POSITIONAL ACCURACY: 0.07'
   b. DATE OF SURVEY: 02/12/21
   c. DATUM/EPOCH: TENNESSEE STATE PLANE (NAD83). OCCUPATIONS FOR CONTROL POINTS ARE 3 MINUTES EACH, SIDE SHOTS ARE 3 SECONDS.
   d. GEOID 3, ZONE 7 REVISED
   e. NO COMBINED GRID FACTORS WERE USED.
6. ALL CORNERS SHOWN ON THE FACE OF THE SURVEY WILL BE SET WITH 5/8 IRON ROD WITH CAP BEARING THIS SURVEYORS COMPANY NAME.
7. ALL STREETS AND ALLEYS, EXCEPT FOR GOLF CLUB LANE, ARE DESIGNATED AS PUBLIC RIGHT-OF-WAY, THE CITY OF FRANKLIN IS NOT RESPONSIBLE FOR THE REPLACEMENT OR REPAIR OF ANY PRIVATE STRUCTURES WITHIN PUBLIC EASEMENTS SHOULD THE STRUCTURES BE DISTURBED IN THE PROCESS OF THE CITY EXERCISING ITS EASEMENT RIGHTS.
8. STREETS, DRAINAGE EASEMENTS, STRUCTURES, AND CULVERTS SHALL BE MAINTAINED BY THE CITY OF FRANKLIN. DETENTION PONDS AND OUTLET STRUCTURES WITHIN PUBLIC DRAINAGE EASEMENTS ARE TO BE MAINTAINED BY THE PROPERTY OWNER OR THE HOA.
9. STORMWATER QUALITY SHALL BE ADDRESSED WITH EACH SITE PLAN.
10. OPEN SPACE AREAS, ROADWAY MEDIANS, BRICK PEDESTRIAN CROSSWALKS, BIKE PATHS, SIDEWALKS OUTSIDE OF RIGHT-OF-WAYS, TRAILS AND DETENTION FACILITIES SHALL BE MAINTAINED BY THE WESTHAVEN GOLF CLUB AND SHALL BE PUBLIC UTILITY, DRAINAGE, AND ACCESS EASEMENTS.
11. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO THE NEW DEVELOPMENT. ALL UTILITIES, (INCLUDING CABLE TELEVISION, ELECTRICAL, NATURAL GAS, SEWER, TELEPHONE AND WATER LINES) SHALL BE PLACED UNDERGROUND.
12. ALL STREET LIGHT LOCATIONS AND QUANTITIES ARE APPROXIMATE, FINAL POSISIONING AND QUANTITY SHALL BE AT THE DIRECTION OF MTE.
13. MINERAL RIGHTS ARE TO BE HELD BY WESTHAVEN GOLF CLUB.
14. MAINTENANCE OF ALL STORMWATER MANAGEMENT FEATURES SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER(S) OR THE HOA.
15. NO OBSTRUCTIONS OR ENCROACHMENTS WHICH IMPEDE THE FLOW OF STORMWATER SHALL BE PERMITTED WITHIN PUBLIC DRAINAGE EASEMENTS. THE CITY OF FRANKLIN IS NOT RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY ENCROACHMENTS THAT ARE DAMAGED OR REMOVED IN THE COURSE OF MAINTENANCE ACTIVITY WITHIN EASEMENTS.
16. THE CITY OF FRANKLIN WATER MANAGEMENT DEPARTMENT HAS UNRESTRICTED ACCESS TO ITS DOMESTIC WATER, SANITARY SEWER, RECLAIM WATER LINES OR SYSTEM IMPROVEMENTS LOCATED WITHIN ITS EXCLUSIVE EASEMENTS WITHIN THE DEVELOPMENT. IN THE EVENT LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES ARE INSTALLED OR PLACED WITHIN A CITY OF FRANKLIN EASEMENT, THE CITY OF FRANKLIN SHALL HAVE THE RIGHT TO REMOVE SUCH ENCROACHMENTS WITHIN THE EASEMENT AS MAY BE NECESSARY FOR THE CITY OF FRANKLIN TO REPAIR, MAINTAIN OR REPLACE ITS INFRASTRUCTURE WHICH IS NOW OR IN THE FUTURE MAY BE LOCATED WITHIN THE EASEMENT WITHOUT OBTAINING ANY FURTHER PERMISSION FROM THE PROPERTY OWNER OR HOA. THE PROPERTY OWNER OR HOA SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ANY SUCH LANDSCAPING, FENCING, CONCRETE, OR OTHER STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN IN COMMON OPEN SPACE LOTS AND IN AREAS OWNED BY THE PROPERTY OWNER OR HOA AT NO EXPENSE TO THE CITY OF FRANKLIN. INDIVIDUAL HOMEOWNERS SHALL BE RESPONSIBLE FOR STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN WITHIN AN EASEMENT ON THE HOMEOWNERS' LOT AT THE HOMEOWNERS' EXPENSE.
17. THERE SHALL BE NO MOWING, CLEARING, GRADING, CONSTRUCTION, STORAGE, OR DISTURBANCE OF VEGETATION IN RIPARIAN BUFFERS EXCEPT AS PERMITTED BY THE CITY ENGINEER, OR HIS DESIGNEE.
18. THE DEVELOPER ACKNOWLEDGES THAT ALL LOTS HAVE ADEQUATE BUILDING ENVELOPES AND NO VARIANCES WILL BE REQUIRED.
19. GREEN INFRASTRUCTURE EASEMENTS (GIE) ARE EXCLUSIVE EASEMENTS DEFINING AREAS SET ASIDE FOR THE CONSTRUCTION, MAINTENANCE, REPAIR, MONITORING, AND OTHER ACTIVITIES NECESSARY FOR THE FURTHERANCE OF WATER QUALITY FEATURES DESIGNATED AS GREEN INFRASTRUCTURE PRACTICES BY THE CITY OF FRANKLIN, AND TO PROVIDE PUBLIC ACCESS TO SUCH FEATURES. ANY AND ALL ACTIVITIES, EXCEPT AS SPECIFICALLY PERMITTED BY NOTATION ON THE CURRENT PLAT OF RECORD AND/OR WITHIN THE RECORDED LONG TERM MAINTENANCE AGREEMENT, SHALL BE STRICTLY PROHIBITED WITHOUT THE WRITTEN CONSENT OF THE CITY ENGINEER OR HIS DESIGNEE.
20. TREES SHALL BE PRUNED TO A MINIMUM OF EIGHT FEET ABOVE GRADE AND NO FENCES OR OTHER OBSTRUCTIONS SHALL BE TALLER THAN THREE FEET ABOVE GRADE WITHIN SIGHT TRIANGLES FOR STREET INTERSECTIONS AND ROADWAY SIGNAGE PER THE LATEST VERSION OF AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS.
21. HB&TS WILL ALLOW THE FUTURE FORCE MAIN EASEMENT TO ENCROACH INTO THEIR EXISTING EASEMENT ALONG BOYD MILL PIKE PROVIDED THE FORCE MAIN PIPE IS SEPARATED FROM THE WATER PIPE BY A MINIMUM OF 15'.





VICINITY MAP
NOT TO SCALE

Lot Area Table		
Lot #	Area (SF)	Area (AC)
LOT 5121	851725.66	19.553
LOT 5025	1835690.42	42.142

PROPERTY DETAILS:

1. SUBJECT PROPERTY IS PRESENTLY IDENTIFIED AS ALL OF PARCEL 23.08 ON WILLIAMSON COUNTY TAX MAP 64. SAID PARCEL IS FURTHER IDENTIFIED AS ALL OF LOT 5025 AS DESCRIBED IN PLAT BOOK 77, PG 89, IN THE REGISTERS OFFICE OF WILLIAMSON COUNTY, TENNESSEE.
2. SUBJECT PROPERTY IS ZONED AS FOLLOWS:
   2.1. ZONING: PD PLANNED DISTRICT
   2.2. PROPOSED USE: CONSERVATION SUBDIVISION
   2.3. TOTAL AREA: 61.695 ACRES +/-
   2.4. AREA IN LOTS: 61.695 ACRES +/-

JOEY C. WILSON II
REGISTERED LAND SURVEYOR
No. 2089
AGRICULTURE
COMMERCE
TENNESSEE NO. 2089
6/1/23

300 0 150 300 600
GRAPHIC SCALE: 1" = 300'

WESTHAVEN

PUD SUBDIVISION
WESTHAVEN GOLF CLUB, REVISION 1

CERTIFICATE OF SURVEY

I (WE) HEREBY CERTIFY THAT THE SUBDIVISION PLAT AS SHOWN HEREON IS CORRECT AND THAT ALL OF THE MONUMENTS SHOWN HEREON HAVE BEEN PLACED AS INDICATED. THIS SUBDIVISION PLAT CORRECTLY REPRESENTS A SURVEY MADE UNDER MY SUPERVISION ON THE 28TH DAY OF MAY, 2021

JOEY C. WILSON II, TENNESSEE RLS NO. 2089
WILSON & ASSOCIATES, P.C.
ENGINEERING/SURVEYING/ENVIRONMENTAL
108 BEASLEY DRIVE, FRANKLIN, TN 37064
OFFICE: 615.794.2275 FAX 615.794.2176
JWILSON@WILSONPC.COM

CERTIFICATE OF APPROVAL OF ELECTRICAL SYSTEMS

MIDDLE TENNESSEE ELECTRIC MEMBERSHIP CORPORATION (MTEMC) WILL PROVIDE ELECTRIC SERVICE TO THE SUBJECT PROPERTY ACCORDING TO THE NORMAL OPERATING PRACTICES OF MTEMC AS DEFINED IN THE RULES AND REGULATIONS, BYLAWS, POLICY BULLETINS AND OPERATIONAL BULLETINS OF MTEMC, AND IN ACCORDANCE WITH THE PLAT APPROVAL CHECKLIST, TREE PLANTING GUIDELINES AND OTHER REGULATIONS CONTAINED ON THE MTEMC WEBSITE AT WWW.MTEMC.COM (COLLECTIVELY THE "REQUIREMENTS"). NO ELECTRIC SERVICE WILL BE PROVIDED UNTIL MTEMC'S REQUIREMENTS HAVE BEEN MET AND APPROVED IN WRITING BY AN AUTHORIZED REPRESENTATIVE OF MTEMC. ANY APPROVAL IS, AT ALL TIMES, CONTINGENT UPON CONTINUING COMPLIANCE WITH MTEMC'S REQUIREMENTS.

MIDDLE TENNESSEE ELECTRIC MEMBERSHIP CORPORATION DATE

CERTIFICATE OF APPROVAL OF SEWER SYSTEMS

I HEREBY CERTIFY THAT:

(1) THE SEWER SYSTEM DESIGNATED IN WESTHAVEN GOLF CLUB REVISION OF LOT 5205, HAS BEEN INSTALLED IN ACCORDANCE WITH CITY SPECIFICATIONS, OR

(2) A PERFORMANCE AGREEMENT AND SURETY IN THE AMOUNT OF $_____ FOR THE SEWER SYSTEM HAS BEEN POSTED WITH THE CITY OF FRANKLIN, TENNESSEE, TO ASSURE COMPLETION OF SUCH SYSTEM.

DIRECTOR OF WATER MANAGEMENT DEPARTMENT DATE
CITY OF FRANKLIN, TENNESSEE

CERTIFICATE OF APPROVAL OF WATER SYSTEMS

I HEREBY CERTIFY THAT:

(1) THE WATER SYSTEM DESIGNATED IN WESTHAVEN GOLF CLUB REVISION OF LOT 5205, HAS BEEN INSTALLED IN ACCORDANCE WITH CITY SPECIFICATIONS, OR

(2) A PERFORMANCE AGREEMENT AND SURETY IN THE AMOUNT OF $_____ FOR THE WATER SYSTEM HAS BEEN POSTED WITH THE HB&TS UTILITY DISTRICT TO ASSURE COMPLETION OF SUCH SYSTEM.

HB&TS UTILITY DISTRICT DATE

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

CERTIFICATE OF OWNERSHIP

I (WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNER(S) OF THE PROPERTIES SHOWN HEREON AS OF RECORD IN BOOK 4664, PAGE 64 AND BOOK 8509, PAGE 336, R.O.W.C., TENNESSEE, AND ADOPT THE PLAN OF SUBDIVISION OF THE PROPERTY AS SHOWN HEREON AND DEDICATE ALL PUBLIC WAYS AND EASEMENTS AS NOTED. NO LOT(S) AS SHOWN HEREON SHALL AGAIN BE SUBDIVIDED, RESUBDIVIDED, ALTERED, OR CHANGED SO AS TO PRODUCE LESS AREA THAN IS HEREBY ESTABLISHED UNTIL OTHERWISE APPROVED BY THE FRANKLIN MUNICIPAL PLANNING COMMISSION, AND UNDER NO CONDITION SHALL SUCH LOT(S) BE MADE TO PRODUCE LESS AREA THAN IS PRESCRIBED BY THE RESTRICTIVE COVENANTS AS OF RECORD IN BOOK _____, PAGE _____, R.O.W.C., TENNESSEE, RUNNING WITH THE TITLE TO THE PROPERTY. I (WE) FURTHER CERTIFY THAT THERE ARE NO LIENS ON THIS PROPERTY, EXCEPT AS FOLLOWS: BOOK _____, PAGE _____, R.O.W.C.

WESTHAVEN GOLF CLUB, LLC DATE

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE SIDEWALKS, AND GREEN INFRASTRUCTURE

I HEREBY CERTIFY THAT:

(1) THE STREETS, DRAINAGE, SIDEWALKS, AND GREEN INFRASTRUCTURE DESIGNATED IN THIS PLAT, HAVE BEEN INSTALLED IN ACCORDANCE WITH CITY SPECIFICATIONS, OR

(2) A PERFORMANCE AGREEMENT AND SURETY IN THE AMOUNT OF $_____ FOR STREETS, $_____ FOR DRAINAGE, $_____ FOR SIDEWALKS, AND $_____ FOR GREEN INFRASTRUCTURE HAS BEEN POSTED WITH THE CITY OF FRANKLIN, TENNESSEE, TO ASSURE COMPLETION OF SUCH IMPROVEMENTS.

DIRECTOR STREETS DEPARTMENT DATE
CITY OF FRANKLIN, TENNESSEE

CERTIFICATE OF APPROVAL OF RECORDING

APPROVED BY THE FRANKLIN MUNICIPAL PLANNING COMMISSION, FRANKLIN, WILLIAMSON COUNTY, TENNESSEE, WITH THE EXCEPTION OF SUCH CONDITIONS, IF ANY, AS ARE NOTED IN THE PLANNING COMMISSION MINUTES FOR THE _____DAY OF_____, 20___, AND THIS PLAT HAS BEEN APPROVED FOR RECORDING IN THE REGISTER'S OFFICE OF WILLIAMSON COUNTY, TENNESSEE.

SECRETARY DATE
FRANKLIN MUNICIPAL PLANNING COMMISSION

CERTIFICATE OF APPROVAL OF SUBDIVISIION NAME, STREET NAMES, AND ADDRESSING

SUBDIVISION NAME AND STREET NAMES APPROVED BY THE WILLIAMSON COUNTY EMERGENCY MANAGEMENT AGENCY AND THE CITY OF FRANKLIN.

WILLIAMSON COUNTY EMERGENCYMANAGEMENT AGENCY DATE

CITY OF FRANKLIN DATE

RECORDING STAMP
HERE

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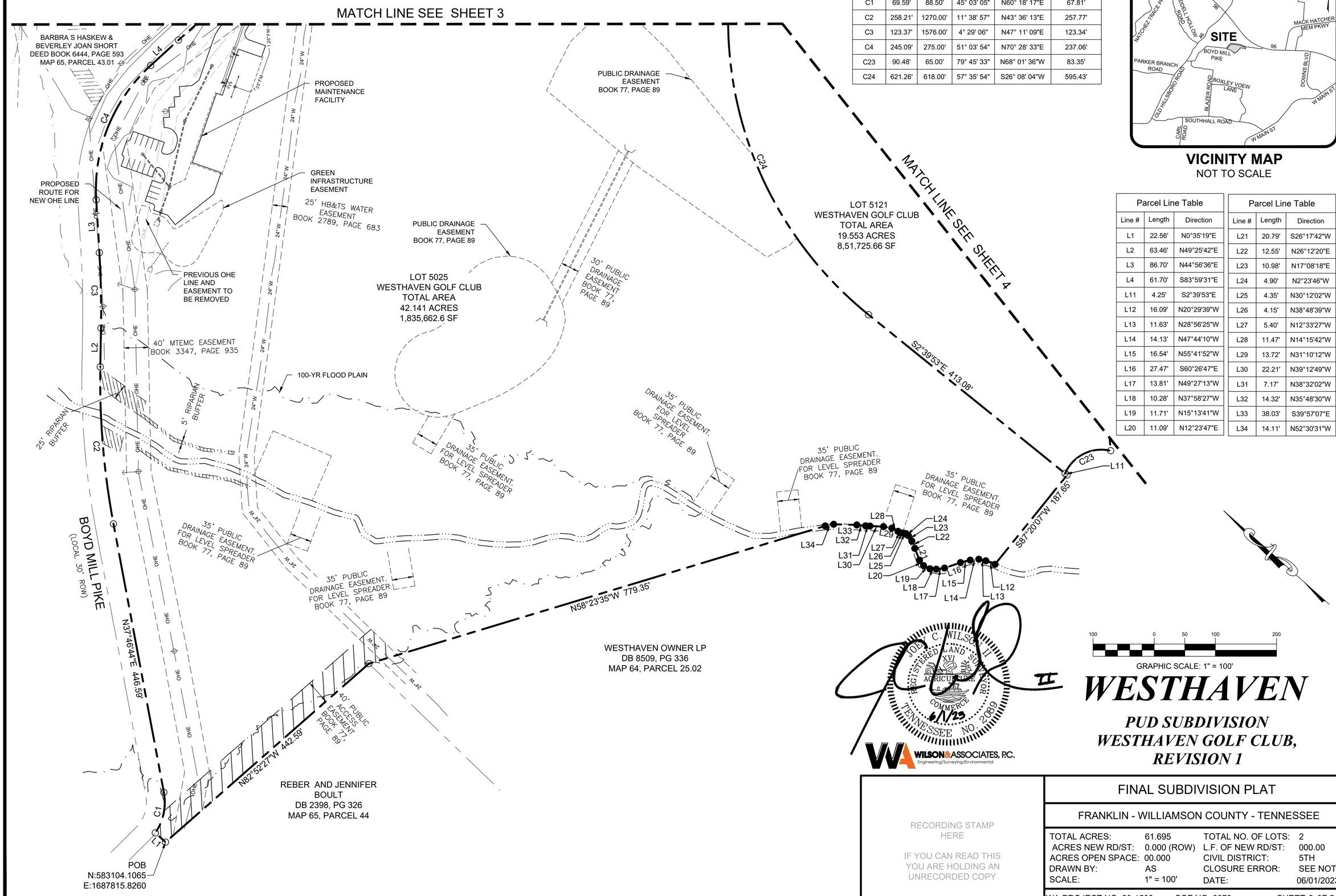
UNRECORDED COPY

FINAL SUBDIVISION PLAT

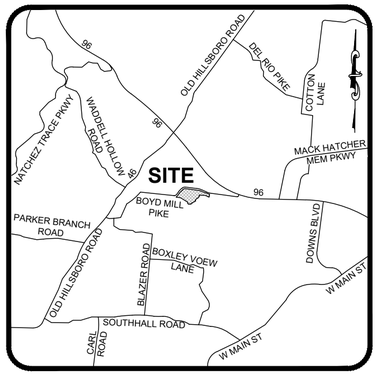
FRANKLIN - WILLIAMSON COUNTY - TENNESSEE

TOTAL ACRES:	61.695	TOTAL NO. OF LOTS:	2
ACRES NEW RD/ST:	0.000 (ROW)	L.F. OF NEW RD/ST:	000.00
ACRES OPEN SPACE:	00.000	CIVIL DISTRICT:	5TH
DRAWN BY:	AS	CLOSURE ERROR:	SEE NOTE
SCALE:	1" = 300'	DATE:	06/01/2023

WA PROJECT NO. 20-1508 COF NO. 8073 SHEET 1 0F 5



Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	69.59'	88.50'	45° 03' 05"	N60° 18' 17"E	67.81'
C2	258.21'	1270.00'	11° 38' 57"	N43° 36' 13"E	257.77'
C3	123.37'	1576.00'	4° 29' 06"	N47° 11' 09"E	123.34'
C4	245.09'	275.00'	51° 03' 54"	N70° 28' 33"E	237.06'
C23	90.48'	65.00'	79° 45' 33"	N68° 01' 36"W	83.35'
C24	621.26'	618.00'	57° 35' 54"	S26° 08' 04"W	595.43'



VICINITY MAP
NOT TO SCALE

Parcel Line Table		
Line #	Length	Direction
L1	22.56'	N0°35'19"E
L2	63.46'	N49°25'42"E
L3	86.70'	N44°56'36"E
L4	61.70'	S83°59'31"E
L11	4.25'	S2°39'53"E
L12	16.09'	N20°29'39"W
L13	11.63'	N28°56'25"W
L14	14.13'	N47°44'10"W
L15	16.54'	N55°41'52"W
L16	27.47'	S60°26'47"E
L17	13.81'	N49°27'13"W
L18	10.28'	N37°58'27"W
L19	11.71'	N15°13'41"W
L20	11.09'	N12°23'47"E

Parcel Line Table		
Line #	Length	Direction
L21	20.79'	S26°17'42"W
L22	12.55'	N26°12'20"E
L23	10.98'	N17°08'18"E
L24	4.90'	N2°23'46"W
L25	4.35'	N30°12'02"W
L26	4.15'	N38°48'39"W
L27	5.40'	N12°33'27"W
L28	11.47'	N14°15'42"W
L29	13.72'	N31°10'12"W
L30	22.21'	N39°12'49"W
L31	7.17'	N38°32'02"W
L32	14.32'	N35°48'30"W
L33	38.03'	S39°57'07"E
L34	14.11'	N52°30'31"W

GRAPHIC SCALE: 1" = 100'

WESTHAVEN

PUD SUBDIVISION
WESTHAVEN GOLF CLUB, REVISION 1

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

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FRANKLIN - WILLIAMSON COUNTY - TENNESSEE

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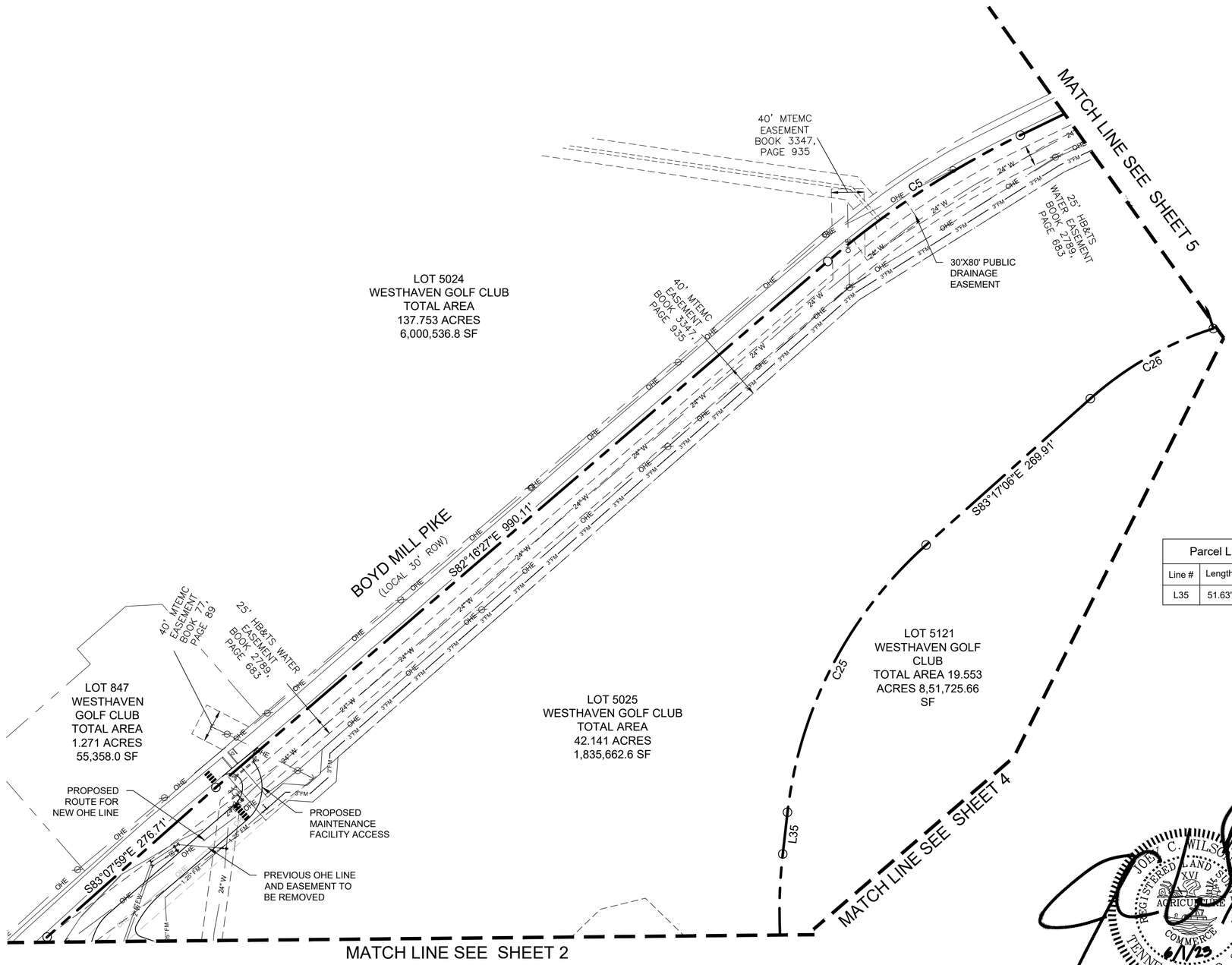
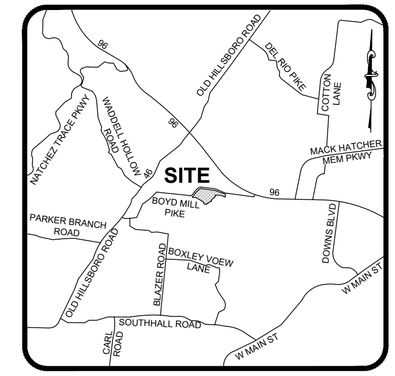
WA PROJECT NO. 20-1508 COF NO. 8073 SHEET 2 0F 5





VICINITY MAP
NOT TO SCALE

Parcel Line Table		
Line #	Length	Direction
L35	51.63'	S54°56'01"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C5	283.39'	1089.00'	14° 54' 36"	S74° 49' 09"E	282.59'
C25	377.74'	518.00'	41° 46' 53"	S75° 49' 28"W	369.42'
C26	175.02'	418.00'	23° 59' 24"	N71° 17' 24"W	173.74'

JOHN C. WILSON II
REGISTERED LAND SURVEYOR
AGRICULTURE
COMMERCE
TENNESSEE NO. 2089
6/1/23

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

WESTHAVEN

PUD SUBDIVISION
WESTHAVEN GOLF CLUB, REVISION 1

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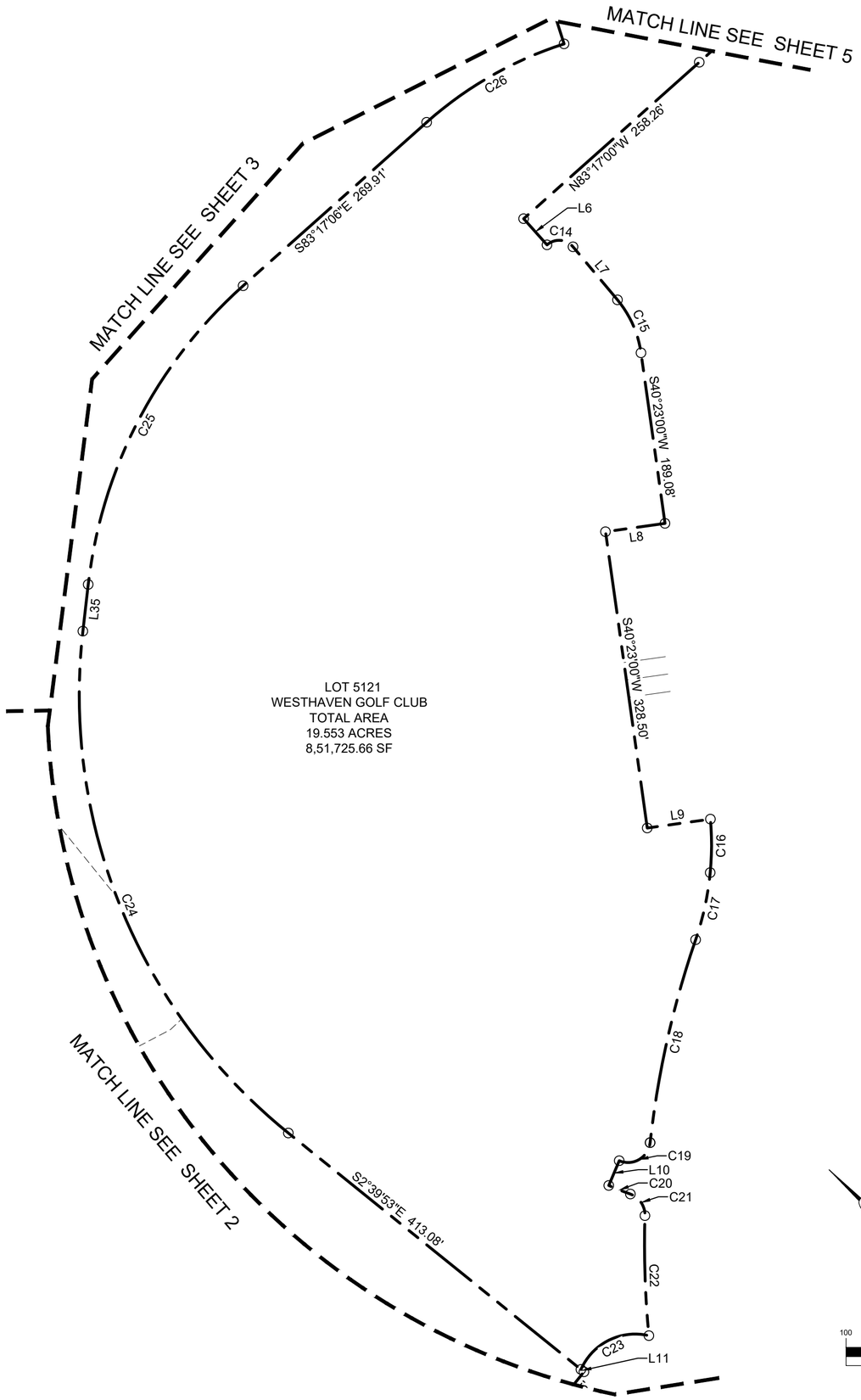
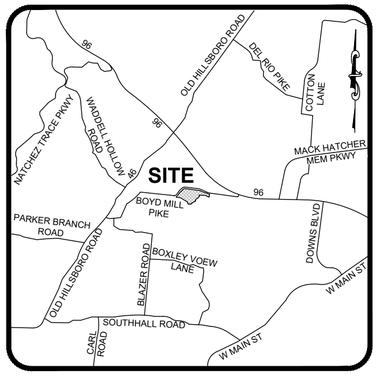
WA PROJECT NO. 20-1508 COF NO. 8073 SHEET 3 0F 5

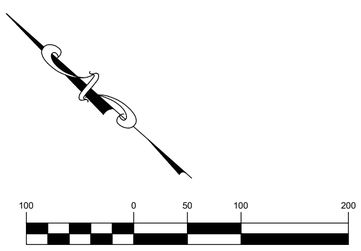




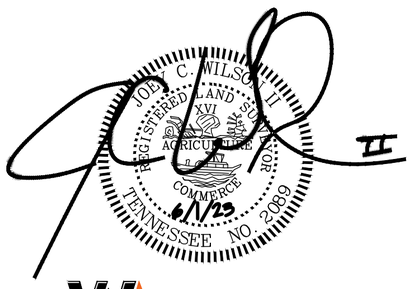
VICINITY MAP
NOT TO SCALE

Parcel Line Table		
Line #	Length	Direction
L6	38.50'	S6°42'01"W
L7	76.00'	S8°29'00"W
L8	66.00'	N49°36'00"W
L9	70.06'	S49°36'00"E
L10	29.50'	S71°20'29"W
L11	4.25'	S2°39'53"E
L35	51.63'	S54°56'01"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C14	32.04'	20.00'	91° 46' 45"	S37° 23' 00"E	28.72'
C15	64.46'	115.75'	31° 54' 26"	S24° 26' 00"W	63.63'
C16	58.85'	320.25'	10° 31' 43"	S48° 39' 06"W	58.77'
C17	75.58'	320.25'	13° 31' 17"	S60° 40' 36"W	75.40'
C18	228.76'	1025.75'	12° 46' 40"	S61° 02' 54"W	228.28'
C19	45.62'	24.50'	106° 40' 55"	N71° 59' 59"W	39.31'
C20	25.57'	427.82'	3° 25' 27"	S19° 58' 06"E	25.56'
C21	30.56'	24.50'	71° 28' 03"	S14° 28' 36"W	28.62'
C22	131.86'	1026.42'	7° 21' 38"	S46° 31' 48"W	131.77'
C23	90.48'	65.00'	79° 45' 33"	N68° 01' 36"W	83.35'
C24	621.26'	618.00'	57° 35' 54"	S26° 08' 04"W	595.43'
C25	377.74'	518.00'	41° 46' 53"	S75° 49' 28"W	369.42'
C26	175.02'	418.00'	23° 59' 24"	N71° 17' 24"W	173.74'



GRAPHIC SCALE: 1" = 100'



WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

WESTHAVEN

PUD SUBDIVISION
WESTHAVEN GOLF CLUB,
REVISION 1

RECORDING STAMP
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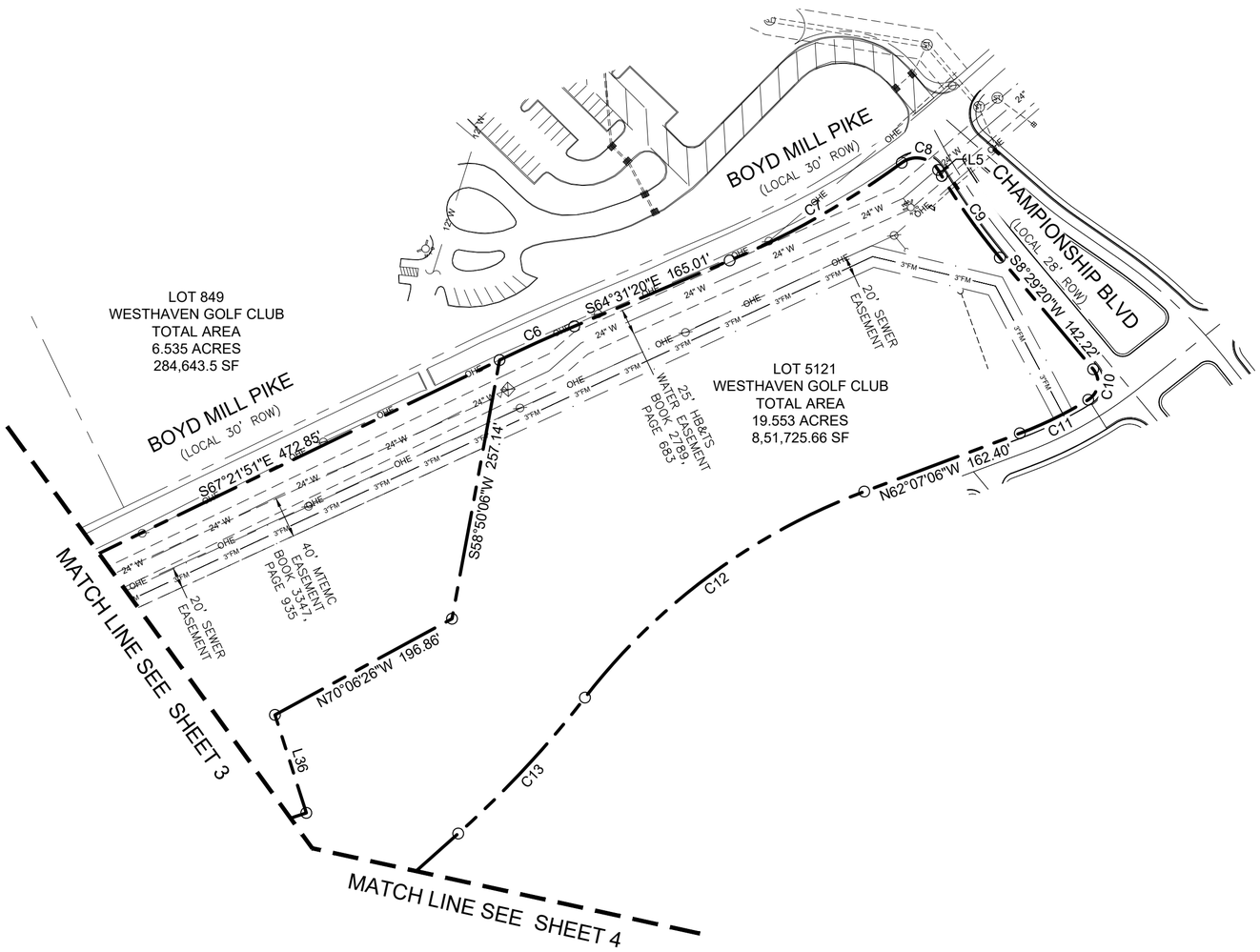
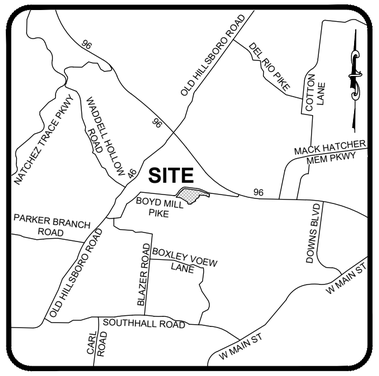
FINAL SUBDIVISION PLAT

FRANKLIN - WILLIAMSON COUNTY - TENNESSEE

TOTAL ACRES:	61.695	TOTAL NO. OF LOTS:	2
ACRES NEW RD/ST:	0.000 (ROW)	L.F. OF NEW RD/ST:	000.00
ACRES OPEN SPACE:	00.000	CIVIL DISTRICT:	5TH
DRAWN BY:	AS	CLOSURE ERROR:	SEE NOTE
SCALE:	1" = 100'	DATE:	06/01/2023

WA PROJECT NO. 20-1508 COF NO. 8073 SHEET 4 0F 5

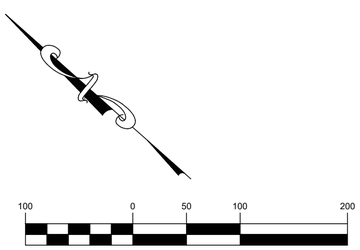




VICINITY MAP
NOT TO SCALE

Parcel Line Table		
Line #	Length	Direction
L5	6.81'	S17°28'41"W
L36	100.60'	S30°42'18"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C6	80.08'	1614.49'	2° 50' 31"	S65° 56' 36"E	80.07'
C7	193.94'	830.12'	13° 23' 09"	S71° 12' 54"E	193.50'
C8	40.79'	24.50'	95° 23' 10"	S30° 12' 54"E	36.24'
C9	98.13'	625.50'	8° 59' 21"	S12° 59' 01"W	98.03'
C10	33.67'	20.00'	96° 27' 35"	S56° 54' 15"W	29.83'
C11	75.12'	380.75'	11° 18' 13"	N67° 46' 13"W	75.00'
C12	343.65'	619.25'	31° 47' 47"	N78° 01' 00"W	339.26'
C13	181.96'	980.75'	10° 37' 48"	N88° 35' 59"W	181.69'



GRAPHIC SCALE: 1" = 100'

JOEL C. WILSON II
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
6/1/23
TENNESSEE NO. 2089

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

WESTHAVEN

PUD SUBDIVISION
WESTHAVEN GOLF CLUB, REVISION 1

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WA PROJECT NO. 20-1508 COF NO. 8073 SHEET 5 0F 5